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TREASURE OF GOLD

FLOAT GUIDE TO THE YELLOWSTONE RIVER FROM BILLINGS TO THE MISSOURI CONFLUENCE

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TREASURE OF GOLD - THE LOWER YELLOWSTONE RIVER

KEN WALCHECK, AUTHOR

To many out-of-staters, the name Yellowstone refers only to that great magnet, "Yellowstone Park," which pulls millions of people - young and old - from all directions to see its many wonders. Most Americans are now aware of the other "Yellowstone," a lengthy and pulsating artery carrying gurgling, grinding, and life-sustaining water through a major portion of Montana - a bold and free-flowing river that doesn't have a major dam anywhere along its route.

To Montanans, the Yellowstone has many attributes. We know it well for its superb floating, its sweeping scenery, its irrigated richness, its diverse ecosystem, its wandering rangelands, and its cities and towns which still blend harmoniously with a unique river that is more than a simple system of flowing water. It represents one of the last major rivers in the continental United States that still functions as a free-flowing system and still remains attuned to its surrounding environment.

This sinuous ribbon of water with its gravel beaches and shifting bars teems with colorful history. It served as a major route of commerce and guided explorers and trappers into a hostile and unchartered wilderness. It carried Indian bull boats, pirogues, Mackinaws, flatboats, and paddlewheelers. It witnessed the passage of brigades of soldiers, prospectors, sodbusters, cowboys, gamblers, shopkeepers, and other opportunists - all eager to pluck a fortune or build a new life in a land of infinite wealth. Although the historical colors have faded a little, the French-coined "Roche Juane" ("Yellow Rock") is still a buckskin river, a Charlie Russell river drawing its medicine from the Big Sky of Montana.

The Yellowstone is a big river, in some spots an awesome one. It courses better than 670 miles from its source and pours almost four trillion gallons a year into the Missouri. In terms of scenery, it represents a diversity of striking beauty, a twisting ribbon of water that runs boldly through a dissected country that lifts in great swells to the open horizons. Which spectacular and scenic vista of the Yellowstone one prefers depends upon one's past exposure to the river. For some it's the cool, upper reaches with their gin-colored tributaries running through steep-walled canyons; for others, it's a wide river bottom in eastern Montana with wind-swept yellow rimrocks and bluffs. Geologically, it tells a fascinating story of eons of sculptering by wind, water and other geological forces. Archaeologically, the area possesses many sites representing the aborginal culture of the Plains Indians. Paleontologically, it contains a rich and varied graveyard of fossils. In terms of wildlife, a diverse corridor of habitats provides for a wide array of plant and animal species. Aesthetically, it has the power to rekindle who knows what questions, memories, hopes.

To many Montanans, the Yellowstone is labeled by a simple dichotomy known as either the upper or lower Yellowstone. The Columbus, Laurel and Billings reaches of the Yellowstone represent transition water with neither the pure clarity of the upper reach, nor the rolling clouds of silt in the lower section. The lower Yellowstone is a different kind of river than the upper reaches, but it's just as true and genuine as where it sprang from the high country. Perhaps even more genuine, for it has lost the look and color of fir, sky, and snow and has begun to be its own river. Once you pass the mouth of the Big Horn River, you enter the lower Yellowstone, which is different from the upper river in size, shape and character. It is for the lower Yellowstone that this float brochure has been developed.

The lower Yellowstone takes the floater through a special kind of country. Those who know the prairie country of eastern Montana recognize it as the kind of place that can make a person feel small. It's a dry and thirsty land, and water made it what it is. Water formed its rocks in the beds of ancient Cretaceous seas. Water sculptured its rocks, gnawed mazes of steep-walled coulees and alluvial valleys, carved its buttes and stripped away its flesh, leaving a sea of jumbled geologic skeletons. It's a place where a floater can encounter a haunting and serene quiet, a place where he can feel at home with ancient and mysterious rhythms, a place that offers a museum of living complexities and wonders.

Because of a monumental decision made by the State Board of Natural Resources and Conservation on December 18, 1978, the Montana Department of Fish, Wildlife, and Parks (MDFWP) was granted an instream reservation of 5.5 million acre feet on the mainstem Yellowstone and its 64 tributaries which allows for preservation of a free-flowing river system. Because of this landmark decision, the Yellowstone will not follow the direction of other major American rivers that have succumbed to unrestricted alterations and depletions. The reservation's value to the people of Montana, to the wildlife communities of the river and to the spirit of the river has now been realized. More important, it provides an opportunity for an inquisitive, bright-eyed child to run up to a seasoned river rat just coming off the lower Yellowstone and ask: "What did you see on your float? Are the sauger running yet" Are the geese nesting?" And the floater can assure future generations with a simple response: "You bet they are."

"Treasures of Gold" serves as an appropriate title for this guide, for gathered inside these pages are fairly detailed maps of the lower Yellowstone from Billings to the mouth of the Yellowstone in North Dakota; a section on fishing the lower Yellowstone; paddling pointers; river safety; river discharge; agate picking; historical sites of interest; and a listing of MDFWP fishing access sites and wildlife management and recreation areas along the lower Yellowstone. The guide is designed to make your trip more pleasant, convenient and safe for the family, but not so complete that it would take all the fun of discovery out of floating.

To discourage trespassing on private land, only fishing access sites and other MDFWP controlled lands are shown on the maps. Floaters should respect the rights of other river users, wildlife encountered along the river - especially nesting geese - and the rights of private landowners. Littering and trespassing can ruin

the relationship between floaters and property owners. Carry your trash with you. If you bring it in, you can pack it out. Most private landowners along the lower Yellowstone are friendly and accommodating, but if you encounter one who is hostile, don't insist on your "rights" and further antagonize him. Be as tactful and courteous as possible and move on downstream. If access to the river is across private lands, you must ask permission, even if there is no sign.

Islands encountered on your float trip fall into four classifications: Bureau of Land Management, Indian, State, and private lands. Because of the complexity of some of the landownership patterns and island modifications, there has been no attempt made to identify the ownership of the islands to the floater. Floaters are advised to check with MDFWP personnel for landownership status of specific islands if recreational activities are intended on these islands.

Montana boating regulations are in force on the river. Remember, approved life vests are required for each boater. Children under 12 years must wear a personal flotation device when a boat is in motion and is less than 26 feet long.

The Lower Yellowstone River is considered a relatively easy river to float. Hazards do exist, however, and floaters should be aware of them. Rattlesnakes are found throughout this reach of the river and hikers should be careful while hiking or climbing. The brittle nature of cottonwood trees can be dangerous, especially during periods of strong winds. Camps should be located with some regard to this hazard. Refer to the sections on river safety and diversion dams and rapids for more precise information on these subjects.

Despite work spent on this guide, errors are possible and, in fact, likely. Watch for hazards that may have been omitted. We would appreciate any comments and corrections that you might have.

"Treasure of Gold" has been designed primarily for floaters. But anglers, hunters, agate pickers, photographers and others who enjoy the outdoors and know the lure of moving water will also find the bulletin helpful. Finally, recreationists should also try and remember that knowing how to use and appreciate the Yellowstone is really an art: the art of relaxing, getting away from it all, scanning the sky, catching a breeze, feeling excitement, getting sunburned and catching a fish. Have a good float!

Acknowledgements

The author would like to thank the many people who helped prepare this guide, among them: Vern Craig, who assisted with the tedious chore of preparing the maps and other phases of the bulletin; Al Elser, who prepared and drafted the Yellowstone hydrograph; Glen West, for his fish illustrations; Pat Gudmundson, for her expertise on agate hunting; Ray Berntsen, who contributed clarification on historical sites; Norma Tirrell for editing assistance; the American Whitewater Affiliation; the Minnesota Department of Natural Resources; the Michigan Department of Natural Resources, which granted permission to use its materials on river safety, "Using a Paddle" and "Reading White Water;" department employees, especially Faye Ruffato and Keith Seaburg, and other regional personnel of the Montana Department of Fish, Wildlife, and Parks who assisted with the publication, and the Montana Travel Promotion Bureau for production assistance. Photo Credits: Montana Historical Library and Gary Wunderwald, Travel Promotion Bureau.

Makoshika State Park near Glendive

HISTORICAL TREASURES ALONG THE LOWER YELLOWSTONE

Floating the lower Yellowstone offers a wide selection of historic landmarks. History, seemingly, springs to life at every turn in the river. It reverberates through shallow coulees where buffalo once thundered toward distant horizons. It rides the transcontinental railroad where trains rattled east with cattle for meat-hungry markets and returned with land-hungry homesteaders. History follows the twisting Yellowstone—highway for William Clark of the Lewis and Clark expedition. It hears still the whistle of steamboats that plied the great river with their cargoes of fur and pioneers. History stares somberly from the sightless windows of abandoned farmsteads, remnants of homesteaders' dreams that were broken by drought and depressions.

Although some of these sites are no longer accessible because of private ownership and obscure and questionable locations, they still offer the opportunity to visualize important historical events that have occurred in the past. Studying the battle terrain as a soldier must have done while flashing sun mirror signals to the Black hills from Signal Butte near Miles City or standing on the river's bank where the steamer Far West once tied up, recaptures the past with a realism no history book can match. A glimpse of history may even help one understand the present, because life today has been irrevocably shaped by events of the past. During your float refer to the bulletin's historical guide and reflect on those places where history and eastern Montana's wide-open spaces blend into a meaningful relationship.

Map Number **YELLOWSTONE COUNTY**

1 Sternwheeler "Josephine" 1875.

The steamer Josephine explored the Yellowstone in 1875 as far upstream as present Billings and concluded that this was the limit of navigation on the stream. A large cottonwood tree was notched at the high point of the Josephine's ascent and record of that location is preserved in the survey notes of W. W. de Lacy.

2 Sacrifice Cliff. On the east side of Billings. 1837

A smallpox epidemic raged among the Indian tribes of the Northwest, and the Indian's custom of taking sweat baths to cure disease increased the fatalities. Sacrifice Cliff is so called because legend has it that many Indians, either in desperation or to appease the wrath of their gods, leaped from its crest to death in the river below.

Private ownership.

2 Smallpox Epidemic of 1837 Sites. On the east side of Billings. 1837.

These sites are of great tradition with the 1837 smallpox epidemic in which many Crows died when they were camped at the lower end of what is now Billings. Some Crows threw themselves from Sacrifice Cliff; others were placed after their death at "Place of the Skulls," in typical Crow cliff interments. The site Where-the-White-Horse-Went-Down memorializes an incident in which two young men mounted a white horse and jumped from the butte, offering themselves in an effort to end the epidemic. Crow tradition says they succeeded.

Private ownership.

3 Coulson. On the East Side of Billings. 1877-1882.

In 1873, steamboat-oriented merchants founded the town of Coulson below the present city of Billings. Here a substantial town grew up that thrived from 1878 until 1882. A wagon road led off toward Bozeman and goods were interchanged with the steamboats during the navigation season. Here stagecoach lines had a main connection between the principal line up and down the Yellowstone Valley and branches that run to such places as the Musselshell and Judith Basin of Montana and other satellite trading towns. A ferry crossing allowed for the movement of traffic across the river. Old iron rings set into the sandstone bluff below the Coulson townsite still exist.

Private ownership.

4 Pompey's Pillar. 30 Miles Southeast of Billings on the Yellowstone River July 15, 1806.

Pompey's Pillar is a massive sandstone block about 150 feet high. It is a well-known landmark of the Lewis and Clark Expedition. In 1806, Clark named the rock for Sacajawea's baby son, whom he had nicknamed "Pomp." He also carved his signature and date of visit which still remains visible today.

Private ownership. National Historic Landmark.

5 Junction City. One Mile Northeast of Custer.

A frontier town of several dozen structures founded by a Bozeman merchant, Paul McCormick, this town served as a freight forwarding point until the coming of the railroad. Its most famous resident was Calamity Jane.

Private ownership.

Map Number

TREASURE COUNTY

6 Big Horn River Mouth Historic District. At the mouth of the Big Horn River. 1807-1876.

6 Fort Manuel Lisa (Fort Raymond, Big Horn Post #1).

In 1807, Manuel Lisa and his Missouri Company moved to capitalize upon the newly-available knowledge of the region. Lisa's men (including some Lewis and Clark veterans) built a post variously called "Ft. Raymond," "Ft. Lisa," or "Big Horn Post," near the mouth of the Big Horn River; over the next few years, it was expanded and rebuilt. This post was abandoned after European hostilities interfered with the fur market to the point that such a long supply line was no longer profitable.

6 Fort Benton #1.

The fur trade revived after the War of 1812, and the Missouri Fur Company built another post in the vicinity of the old Ft. Lisa in 1821.

6 Big Horn Post #2.

In 1824, the Rocky Mountain Fur Company constructed their own trading post in the same area.

6 Fort Cass.

As the rendezvous system of seasonal trading in the central Rockies broke down, a new sequence of posts was developed along the Yellowstone drainage by the American Fur Company and its successor, Pierre Choteau, Jr., and Company. The earliest of this sequence of posts was Fort Cass, built in 1832 by Samuel Tullock. Intrusions by the hostile Sioux Indians damaged the company's lucrative trade with the Crows and forced abandonment of the fort.

6 Fort Sarpy II.

Built by Robert Meldrum in 1857, this was the last attempt by the American Fur Company to maintain posts for the Crow Indian trade in this area. Its abandonment was occasioned by the fact that Sioux pressure had finally pushed the Crows further west to the foot of the Big Horns.

6 Fort (F.D.) Pease.

Fort Pease was built by a group of men from Bozeman, the principal promoters being Major Fellows D. Pease and Mr. Paul McCormick, both of whom were prominent in business activities in the region. It served as the headquarters for traders, hide hunters, wolfers and as a stopping point for mackinaw-boat travelers to the States. They built the post in June 1875 and occupied it until March 1876. This post represents the first reoccupation of the strategic Yellowstone/Big Horn junction since the abandonment of Fort Sarpy II, and was a direct challenge to the Sioux, who were not long in accepting it. They harrassed parties of hunters out from the post frequently and lay in wait out of artillery range to waylay travelers. The residents were escorted back to Bozeman by a military column on March 4, 1876. The post served as a bastion for an extensive encampment of Col. Gibbon's column in the spring and summer of 1876, but was never formally designated a military post.

Private ownership.

Map Number

ROSEBUD COUNTY

7 Fort Alexander. Six miles west of Forsyth. 1842.

Built by Charles Larpenteur for the American Fur Company. One of the company's series of posts in Crow country, and valuable in maintaining contact with these friendly Indians.

Private ownership.

8 William Clark Notation. 1806.

On July 28, Clark entered a notation in his diary describing a unique site somewhere between Armell's and Porcupine creeks in present Rosebud County: "The cliffs on the South Side of the Rochejhone (Clark's spelling of "Roche Jaune," French for "yellow rock") are Generally comp. of a yellowish Gritty soft rock...Straters of Coal in the banks on either Side those on the Star. Bluffs was about 30 feet above the water and in 2 vanes from 4 to 8 feet thick, in horizontal position. The coal contained in the Lar Bluffs is in Several vaines of different heights and thicknesses. This coal or carbonated wood is like that of the Missouri of an inferior quality."

Students of Lewis and Clark, 175 years later, would find a taste of irony in Clark's entry - when an energy-hungry nation would be competing for this "inferior" coal. They would also find irony in knowing that this area would later be Nichols, site of the first pipeline to convey Yellowstone water to energy conversion plants -the Colstrip generating complex.

9 Terry-Custer Expedition Campsite. Two miles west of Rosebud at the mouth of Rosebud Creek. June 21-22, 1876.

Here Terry made the decision to send Custer up the Rosebud in a movement generally coordinated with that of the rest of the expedition. Last-minute preparations for combat were made and the last mail was sent off from the 7th Cavalry. The regiment held its last parade and marched away toward the country believed occupied by the hostile Sioux. Three days later over a third of the men died on the Little Bighorn.

Private ownership.

Map Number

CUSTER COUNTY

10 Fort Keogh. Two miles southwest of Miles City. 1877-1908.

At one time the largest army post in Montana, Fort Keogh served as a major post at the close of the Indian wars. Several original buildings remain and the old parade grounds are still intact. Fort Keogh had been an unusual post from the beginning. One of the few diamond-shaped posts, it was built with no stockade.

Federal land.

11 Range Riders Museum. One mile west of Miles City.

A memorial to those who rode the unfenced range. The main building of the museum is dedicated to one particular group - the cowboys who came to the area before 1910 - and is filled with objects which belonged to those popular folks heroes, from their saddles to their guns to an impressive collection of other historical objects.

Private ownership. Visitors fee charged.

12 Miles City Historic District. At Miles City, 1880s.

In the heart of open-range country, this active cattle town was known as the "Cow Capital" of Montana. In the early days, the south side of Main Street was a solid block of saloons, gambling dens and dance-halls; the respectable citizens lived on the north side. Although none of the old buildings has survived, Miles City retains much of the old cowtown atmosphere.

Private ownership.

12 Seventh Cavalry Fight on the Yellowstone. At Miles City. August 4, 1873.

This encounter was the first between the westward moving Northern Pacific Survey and the Sioux, opening a week of intermittent hostilities which were contributory to the 1876-77 conflict.

Private ownership.

13 Signal Butte. Four miles southeast of Miles City. 1870s.

During Indian trouble, the United States military flashed sun mirror signals to the Black Hills 175 miles away.

Federal land.

14 Buffalo Rapids. Approximately 26 river miles northeast of Miles City. 1860-1880.

These rapids were the main obstruction to navigation in the Yellowstone below Miles City. Particularly important was the sinking of the **Yellowstone** in May of 1879. This loss was a blow to Montana businessmen.

Federal land.

15 deSmet-Sioux 1868 Treaty Site. Near Terry, four miles above the mouth of the Powder River. June 1868.

In 1868, Father deSmet was sent by treaty commissioners from Fort Rice to open negotiations with the northern tribes of the Sioux. He met them here for a conference, and secured but a few Indians to come to the Fort and sign that component of the "Fort Laramie Treaty of 1868." Here most of the northern Sioux indicated that they did not wish to treaty, with the government. These were the bands most active in the 1867-77 hostilities.

Private ownership.

16 Terry's Supply Camp. Near Terry at the mouth of the Powder River. 1876-1882.

This small military post was built in the summer of 1877 and was intended to serve as the steamboat landing for supplies destined for Fort Custer during that part of the year when steamers could not ascend the Big Horn. The post consisted of barracks, officers' quarters, warehouses and the landing. It was occupied until the completion of the Northern Pacific Railroad to this point in 1882, which ended the army's dependence upon steamboat traffic.

Private ownership.

17 Private William George Burial Site. One-quarter mile east of the mouth of the Powder River on the south bank. A gravestone marks the burial site.

Pvt. George was with the 7th Cavalry when he was badly wounded during the battle of the Little Bighorn on June 26, 1876.

He died while being taken to Fort Lincoln aboard the steamboat Far West. The steamer stopped just long enough to bury him here across the river from Sheridan's Butte.

Map Number

DAWSON COUNTY

18 Hagen Site. Six miles southwest of Glendive. Late historical period.

Hagen Site is the location of a late prehistoric earth lodge village believed to represent a settlement of the Crow Indians before they become nomadic bison hunters. In 1938 partial excavations of the site revealed a midden area of more than 10 acres. Storage pits, implements and human bones have been found on this farming site.

Private ownership. National historic landmark.

Map Number

RICHLAND COUNTY

19 Brazeau Houses. Three miles northeast of Savage. 1828.

An early trading post on the extreme lower Yellowstone.

Private ownership.

FISHING ACCESS SITES AND WILDLIFE MANAGEMENT AREAS ON THE LOWER YELLOWSTONE RIVER

The lower Yellowstone River offers a wide variety of recreational opportunities on Department of Fish, Wildlife and Parks controlled lands. Whether you enjoy battling a tackle-busting paddlefish on the banks of the Yellowstone, stalking wild asparagus, searching for moss agates or watching the flash of a whitetail disappearing into a clump of willows, it's all there waiting for you.

In recent years, accelerated and intensive agricultural practices, development of energy conversion plants and a sharp increase in numbers of outdoor recreationists in the Yellowstone River drainage prompted the department to purchase multipurpose recreation sites along the Yellowstone River.

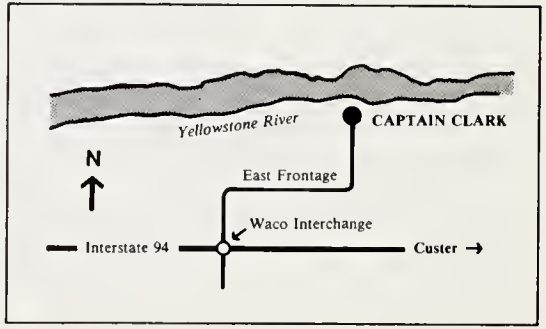
This section of the bulletin is intended to furnish the recreationist with information on department-controlled lands along the lower Yellowstone. Further information on a particular area is available at the Miles City Regional department office (232-4365).

We hope you enjoy your visit to one or more of the department's recreation areas along the lower Yellowstone River. Please respect the rules and regulations governing use of these areas.

Pompeys Pillar near Custer

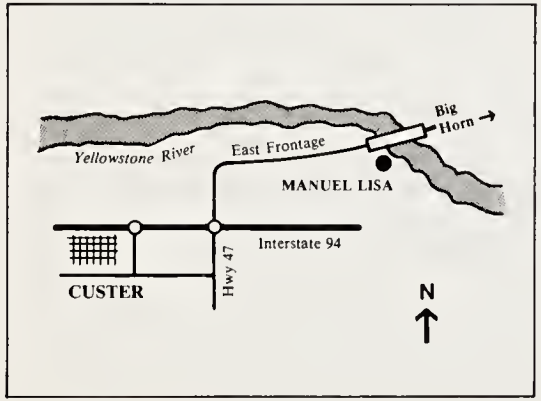
CAPTAIN CLARK

This site is located approximately 9 miles west of Custer. The area contains about 95 acres which is mostly agricultural land. You can reach the access by turning off I-94 at the Waco Interchange. From that point, you enter onto the Frontage Road and proceed east approximately 2.5 miles, then down a gravel road for ¾ of a mile in length that connects the access area with the Frontage Road.



MANUEL LISA

This site is located approximately 4½ miles east of Custer. The area contains about 34 acres of bottom land. You can reach the access by turning off I-94 at the State Highway 47 exit, then travel 2 miles east on the Frontage Road.



ISSAC HOMESTEAD WILDLIFE MANAGEMENT AREA

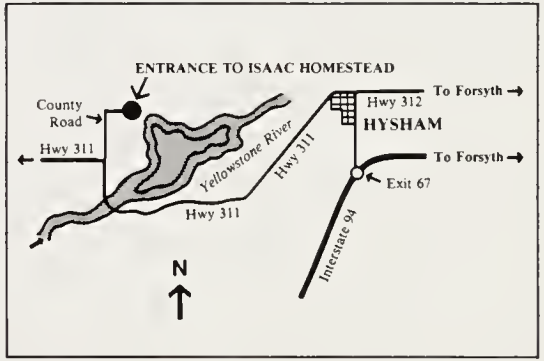
Location - this picturesque wildlife management area, situated in Treasure County west of Hysham near the old town of Myers, comprises approximately 1,277 acres.

Entrance to the area is via exit 67 from Interstate 94 to Hysham and then 7.9 miles west and north on Highway 311 to Isaac Homestead direction sign; and then north 1.6 miles on gravel county road to the management area.

Special attractions - A diversified river bottom habitat of cottonwood groves interlaced with meadows, sloughs and grain fields provides optimum conditions for a variety of wildlife species. Huntable populations of deer, pheasant, cottontails and numerous species of waterfowl are found. However, waterfowl hunting on this stretch of the Yellowstone is not allowed within the confines of the normal stream flow, including all islands, sloughs and sandbars.

The Isaac Homestead area also provides a wide assortment of recreational opportunities - fishing, bird-watching, asparagus picking, trapping and agate hunting. Although there is no boat ramp, the area is suitable for launching small boats.

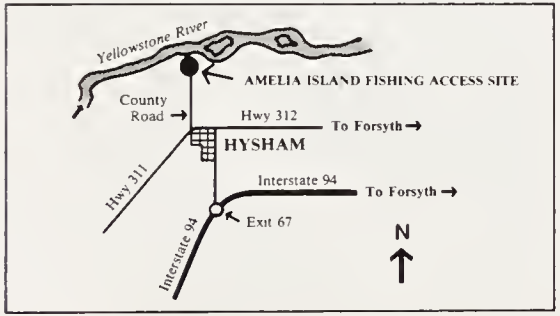
Because the Isaac Homestead Wildlife Management Area is administered primarily for wildlife and hunting, development is minimal. Although tenting and camping are permitted, no campgrounds or boat ramps are available.



AMELIA ISLAND FISHING ACCESS SITE

The Amelia Island Fishing Access Site is the Department's most recent acquisition on the Yellowstone River. Access to the 88-acre site can be reached by turning north from Highway 311 at the county gravel road on the west side of Hysham and then 1.4 miles to the area.

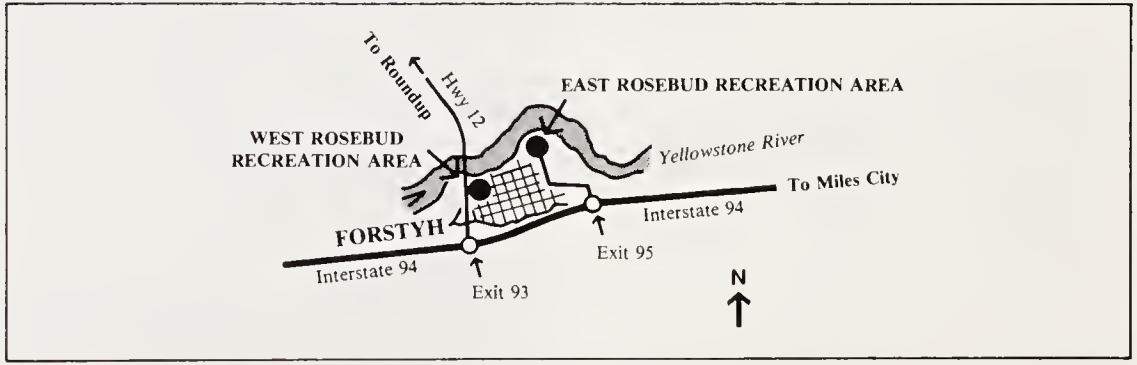
To ensure a quality wildlife habitat for game and nongame species, minimum development for the area is planned.



EAST AND WEST ROSEBUD RECREATION AREAS

The West Rosebud Recreation Area is situated on the west side of Forsyth. Access is via exit 93 from Interstate 94 and then 0.4 miles north on Highway 12 to the site on the south side of the Yellowstone River. The site features a small campground with sanitary facilities, a picnic area and a boat ramp.

The East Rosebud Recreation Area is located on the east side of Forsyth. Access is via exit 95 from Interstate 94 and then 0.4 miles north and west on Main Street; then north 0.4 miles on 15th Avenue to the site. The area features a small camping and picnicking area with sanitary facilities. There is no boat ramp at the site, but the area is suitable for launching small boats.



FAR WEST FISHING ACCESS

The Far West Fishing Access development was completed during the late summer of 1980. Leased from the Department of State Lands, the 30-acre area offers picnic and camping facilities and boating access to the Yellowstone River. A small, gravel-bottomed pond has been stocked with smallmouth bass.

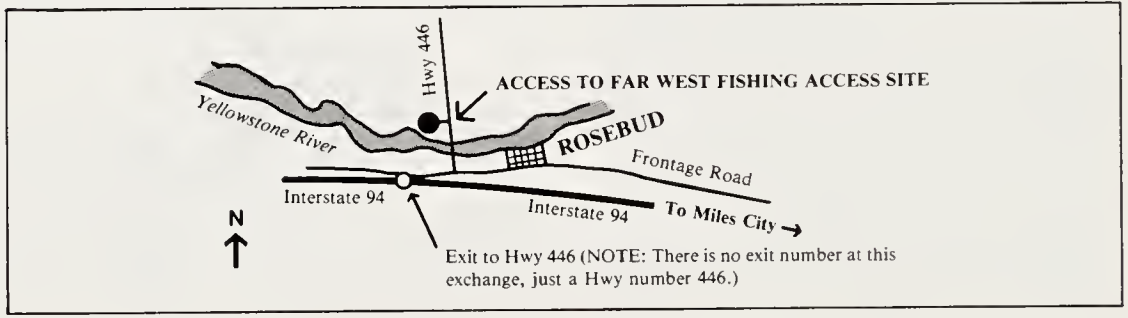
Access to Far West is via exit Highway 446 from Interstate 94 and then 1.8 miles east and north on Highway 446 to the site on the north side of the Yellowstone River.

During the Indian campaigns of the 1870s, the two best known steamships on the upper Missouri and her tributaries were the Josephine and the Far West. They proved to be both an economical and a speedy mode of shuttling supplies and troops to the various military cantonments on the lower Yellowstone River.

During the campaign of 1876, an Army supply depot was established on the banks of the Yellowstone at the mouth of Rosebud Creek. It was here - in a cabin on the steamer Far West - that generals Terry and Gibbon and Lt. Col. Custer formulated their battle strategy. At noon on June 22, Custer and his famed 7th Cavalry followed the path of Rosebud Creek toward the Little Bighorn River.

On June 23, the Far West, captained by Grant Marsh, moved upstream from Rosebud Creek to the mouth of the Bighorn. With great dexterity, Marsh then coaxed the mighty steamer up the treacherous tributary to its junction with the Little Bighorn. Here, Marsh waited for news of the battle.

One week later, as the story of the Custer battle was still unfolding, Marsh prepared to thread the Far West down the Bighorn's narrow channel to the Yellowstone. On July 3, the Far West, carrying reports of the Custer battle and 38 seriously wounded soldiers, sped eastward to Fort Lincoln (present site of Bismarck, N.D.), a distance of 710 miles, in a mere 54 hours. Unknown to Marsh, the Far West had set a downstream speed record unequaled by any other craft to float the Missouri or her tributaries from Fort Benton to St. Louis. The Far West was dubbed the "Speed Queen" of the Missouri.

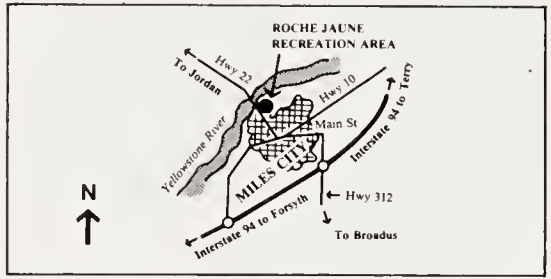


ROCHE JAUNE RECREATION AREA

Roche Jaune, a 1.5-acre area with a boat ramp fronting the Yellowstone River at Miles City became the first state recreation area purchased with money from Montana's coal severance tax fund. The name Roche Jaune (a French word pronounced row-shown, meaning yellow rock) was used as early as 1795 to describe the Yellowstone River.

Situated in Miles City, the recreation area serves an estimated 32,500 people who live within a day's travel of the site. It provides opportunities to float, swim, water ski, fish and hunt for agates. With over 200 feet of river frontage, the site was chosen because of a critical need for public river access on the Yellowstone. Roche Jaune now provides the only public recreation access to the Yellowstone River in the 75-mile stretch from the Far West Fishing Access Site at Rosebud to the Powder River Depot Fishing Access downstream.

Access to the area is via Highway 22 from Main Street in Miles City and 0.9 mile north to the site on the south side of the Yellowstone River.



POWDER RIVER DEPOT STATE MONUMENT

Access to the monument is via exit 169 from Interstate 94 to Frontage Road (Highway 10) and then east 0.9 miles to the site which is located on the east side of the Powder River. No facility improvements, presently exist on the site. Future plans include road improvements, historical signs, picnic facilities and a boat ramp. The department is leasing this historic monument from Burlington Northern Inc., in cooperation with the Bureau of Land Management and a private landowner.

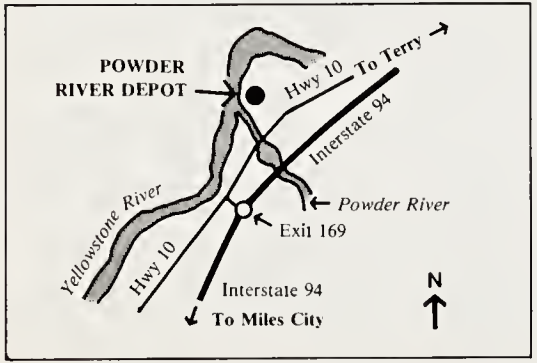
History - During her epic flight down the Yellowstone and Missouri, the steamer, Far West, paused below the mouth of the Powder River long enough to bury Pvt. William George, who was wounded with Maj. Reno's troops. Today, George's grave site has been restored and a marker bearing his name identifies its location.

Like the Rosebud, the mouth of the Powder River was a significant landmark and camping spot for early travelers. Prehistoric remains such as arrowheads, scrapers and other tools have been found scattered about the area. Archaeological evidence suggests that more than one Indian civilization occupied its banks. During more recent times, Sitting Bull's Sioux camped near here during the winter of 1869.

During one point in the Indian Campaign of 1876, the Powder River area buzzed with activity since it was a major supply depot along the Yellowstone. Custer's troops departed from here on their westward trek, leaving all "nonessentials" behind in storage. Following the Custer battle, all remaining supplies were ordered shipped to Rosebud Creek. Because more than one trip was necessary, many of the supplies were left behind. When the steamer Far West returned for the remainder, a skir-

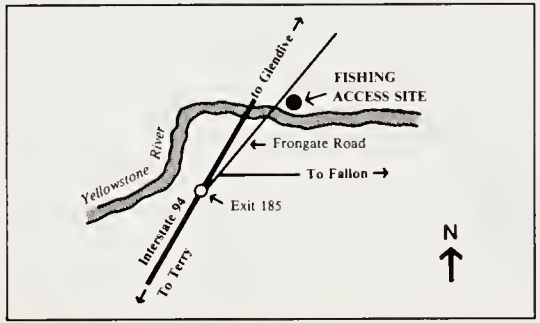
mish developed when Army troops found Sioux rummaging through the supplies. One Army scout was shot in the fracas and buried overlooking the Yellowstone.

During August of that same year, Crook's troops camped at the Powder River site for nearly two weeks awaiting orders. Among the 4,000 troops and scouts in the encampment was William F. "Buffalo Bill" Cody, Crook's chief scout.



FALLON BRIDGE FISHING ACCESS SITE

The seven-acre site with a boat ramp fronting the Yellowstone River can be reached by taking exit 185 from Interstate 94 and then driving 1.7 miles east on the Frontage Road to the site on the north side of the Yellowstone River. The area provides opportunities to float, swim, water ski, fish and hunt for agates. The area does not provide any camping or sanitary facilities.



INTAKE FISHING ACCESS

Location - This 10-acre site is situated in Dawson County, approximately 17 miles northeast of Glendive. Entrance to the area is at milepost 17 on Highway 16 and then 1.2 miles east on a gravel county road.

Special Attractions - The featured attraction of the Intake site is snagging for the prehistoric paddlefish. During May, June and early July, anglers travel long distances to churn the coffee-colored water with heavier-than-usual fishing gear.

The snagger's outfit usually includes a spinning rig or star-drag reel and sturdy pole, with line testing from 40 to 80 pounds. The technique includes fitting the terminal end of the fishing rig with one or more large treble hooks and heavy sinker, and then casting far out into the river. By retrieving with a series of hefty jerks, the snagger—if everythings goes right—might hook a paddler that will weigh 90 pounds or more.

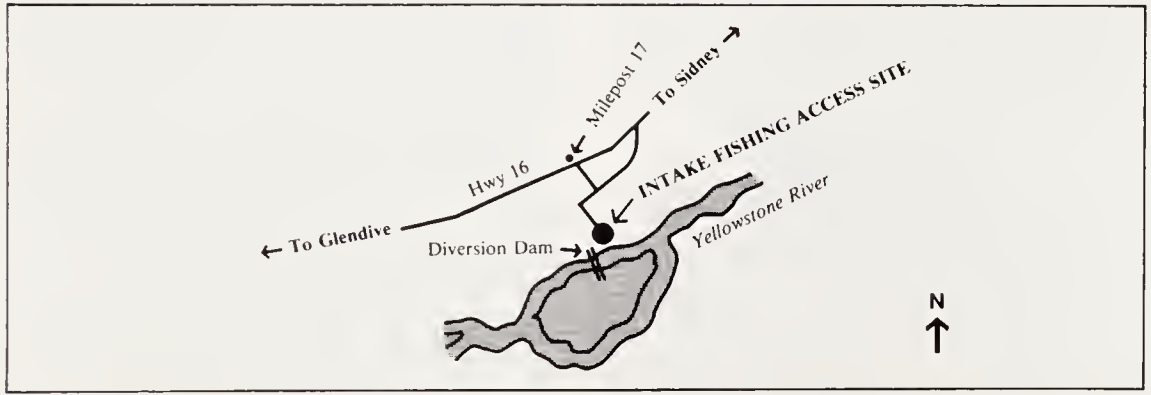
The Intake site is also noted for its excellent sturgeon, walleye, catfish and sauger fishing. In addition, it attracts agate hunters and birdwatchers and serves as an access for river float trips to the Elk Island Wildlife

management and Recreation Area, 21 miles downstream. A boat ramp provides access to the river.

Although deer and pheasants are found in the area, hunting and shooting are discouraged because of the area's small size and the large number of recreationists who use it.

The site features a small campground with sanitary facilities and interpretive signs. During the paddlefish run, a camping fee of $2 per night is charged.

Boat fishing restriction - The portion of the Yellowstone River, approximately one-fourth mile downstream from the Intake Diversion, as posted is closed to fishing or snagging from boats from May 1 to July 31, unless opened earlier by special order.



ELK ISLAND WILDLIFE RECREATION AREA

Location - The area is situated in Richland County approximately two miles southeast of Savage. Access is between mileposts 32 and 33 on Highway 16, and then one mile northeast on an all-weather county road.

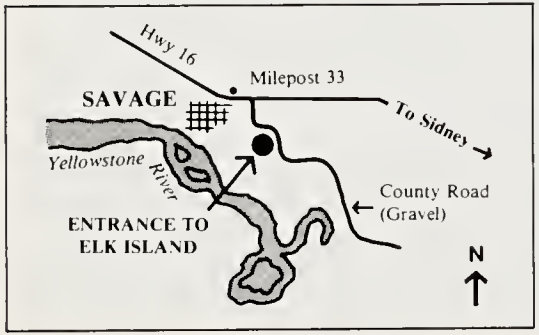
Special Attractions - The Elk Island site was purchased in 1975 and comprises approximately 1,200 acres; 656 acres are owned by the Department of Fish, Wildlife, and Parks; 20 acres are leased from Burlington Northern Inc.; 369 acres are leased from the Department of State Lands, and 162 acres of Natural Resource lands are administered by the Bureau of Land Management.

Within this large tract of prime wildlife habitat, populations of white-tailed deer and pheasant provide excellent hunting. Sharp-tailed grouse, Canada geese and mallards are common during fall. Waterfowl hunting is permitted on this stretch of the Yellowstone. Several sloughs and small ponds in the area provide a cattail and rush habitat for nesting waterfowl and furbearers. Many islands provide additional opportuni-

ty for excellent whitetail and pheasant hunting. A boat launching ramp allows access to the river and islands.

Other recreational pursuits include agate hunting, asparagus and berry picking, birdwatching, trapping, boating and fishing.

To ensure a quality wildlife habitat for game and nongame species, minimum development exists. Although tenting and camping are permitted no developed campground is available.



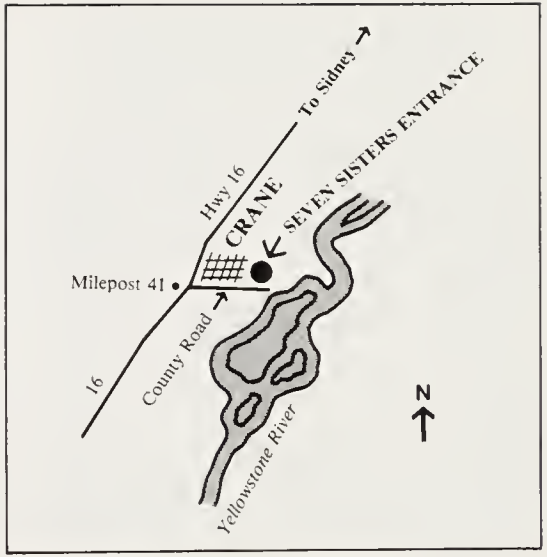
SEVEN SISTERS WILDLIFE RECREATION AREA

Location - The Seven Sisters area is situated 10 miles southwest of Sidney in Richland County. Access is at milepost 41 on Highway 15, then one-half mile east on a gravelled county road.

Special attractions - The Seven Sisters Wildlife Management and Recreation Area was purchased in 1974 and comprises 365 acres. The site is bordered by approximately three-fourths of a mile of Yellowstone River side channel. Cottonwoods, grain fields, meadows and backwater sloughs provide diversified habitat for various wildlife species.

Seven Sisters furnishes good hunting for a variety of game species, including pheasant, white-tailed deer and waterfowl. A wide assortment of other recreational activities - boating, trapping, birdwatching and agate hunting - is also available.

Because the main recreational pursuit at the area is hunting, development is minimal. There is no campground, but tenting and camping are permitted.



PUBLIC BOAT LAUNCHING SITES NOT CONTROLLED BY THE DEPARTMENT OF FISH, WILDLIFE, AND PARKS

Billings (Gravel launch only)

Riverfront Park (Josephine Lake): Access via South Billings Blvd. (Highway 416).

Two Moons Park: Access to the park is available from the 27th Street exit from Interstate 90 via city streets and a frontage road that follows the western boundary of the park.

East Bridge: Access is via Highway 87 east, under the bridge just as it crosses the Yellowstone River.

Huntley

Huntley Bridge: Access is via Highway 10 east at the Huntley turnoff.

Glendive

River Street: A general public boat launching site can be reached by turning north on Meade Street from Towne Road (old U.S. 10) and then east on Clement Street past the Highway Department to the launch site.

FISHING THE LOWER YELLOWSTONE

There are not many iron-clad guarantees in life, but if you like to fish, the Yellowstone offers angling enthusiasts a diversity of fishing that can only be found in a few other places in the United States.

Fishing in the lower Yellowstone is somewhat like playing the roulette wheel. Big fish, small fish, just about all kinds of fish can be found. The lower Yellowstone boasts a total of about 45 fish species compared with 17 recorded for the upper river. There are fish as primitive as the paddlefish and shovelnose sturgeon, as rare as the pallid sturgeon, as unusual as the blue sucker and as popular as the walleye and channel catfish.

Most fishermen utilizing the lower Yellowstone fish for sauger, walleye, channel catfish, paddlefish, shovelnose sturgeon, and burbot (ling). Although northern pike, smallmouth bass, crappie, perch, and an occasional trout are caught, most anglers focus their attention on those game fish that are more numerous in the river. The following will, hopefully, provide anglers with some basic background information on six of the more popular species, angling tips and angling hot spots.

PADDLEFISH

What makes 3,000 excited anglers flock to a short section of Yellowstone River shoreline and beat the water to a froth by flailing it with heavier-than-usual fishing gear?

The paddlefish. What else?

During May, June and the early part of July, a special breed of angler travels to a rocky stretch of the river near Glendive at the Intake Diversion Dam. It's here where they rig up their saltwater fishing gear and churn the coffee-colored water for the senior citizen of the Yellowstone - the paddlefish. Paddlefish are also caught in lesser numbers at the mouths of the Tongue and Powder Rivers and the Forsyth diversion dam.

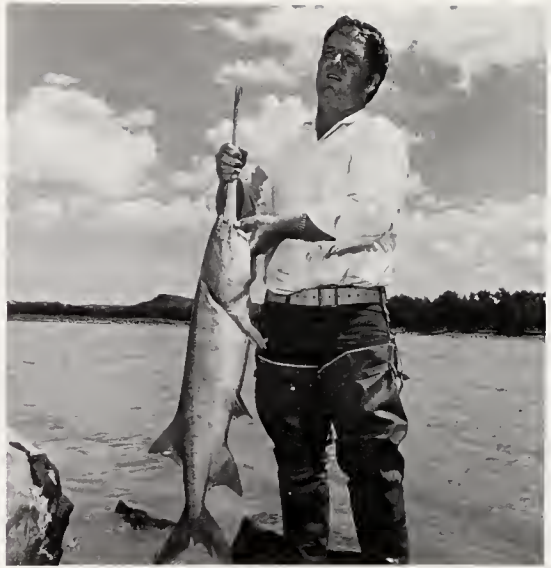
Remarkably adapted to a turbid environment, the paddlefish *(Polyodon spathula)* serves as a classic example of an organism that has gone through millions of years of fine ecological tuning. Fossil evidence indicates that the skateboard-nosed fish has been around for better than 70 million years - long enough to have seen the rise and fall of many species such as the saber-toothed tiger.

Nature has ingeniously equipped the prehistoric denizen of murky waters with a unique set of anatomical features. The most noticeable feature is a flattened snout-shaped spatula which has been designed to function like a sensitive sensory device in detecting swarms of minute plankton no larger than a needle point. Once inside the gaping mouth, the microscopic plants and animals are filtered out by numerous comb-like structures called gill rakers and diverted to the digestive tract.

Since paddlefish feed on plankton, conventional fishing bait - live or artificial - won't catch these fish.

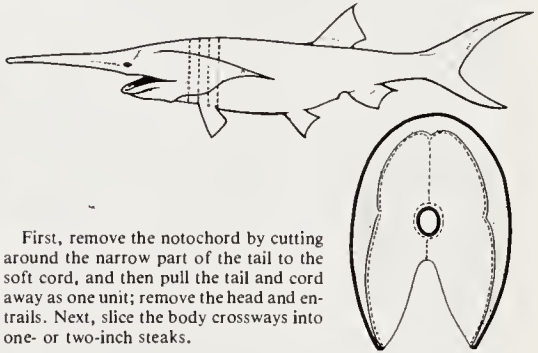
What you have to do is snag for them. The snagger's rig usually consists of a heavy saltwater outfit, either a spinning rig or a star-drag reel and sturdy pole, with line testing 40 to 80 pounds.

In brief, paddlefishing consists of fitting the terminal end of your fishing rig with one or more large treble hooks and a heavy sinker, and then casting this apparatus far out into the river. By retrieving with a series of hefty jerks, the snagger, if everything goes right, might hook into a lunker that will go 90 pounds or better.



HOW TO CLEAN A PADDLEFISH

Paddlefish are not only exciting to catch, but if cleaned properly, delicious to eat.



First, remove the notochord by cutting around the narrow part of the tail to the soft cord, and then pull the tail and cord away as one unit; remove the head and entrails. Next, slice the body crossways into one- or two-inch steaks.

Lay each steak down flat and trim (along dotted line as shown in above drawing) the skin and outer red or darkest meat away from the inner or light colored meat. It is very important to remove all of the dark meat prior to cooking. The flesh is now ready for smoking, frying, deep-frying, broiling or any other method used to prepare fish.

LEGEND

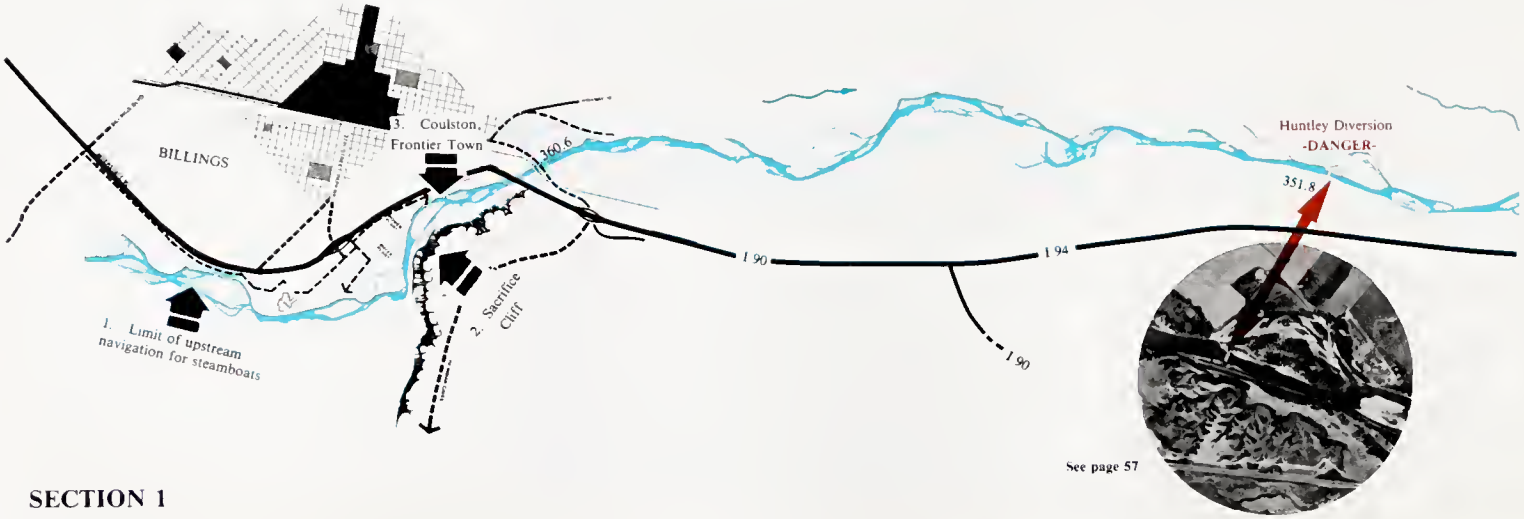
Danger - Diversions

351.8 Miles Upstream from Confluence with Missouri River

Points of Interest and Historical Significance

Direction of River Flow

Fishing Access Sites, State Recreation Areas and Wildlife Management Areas

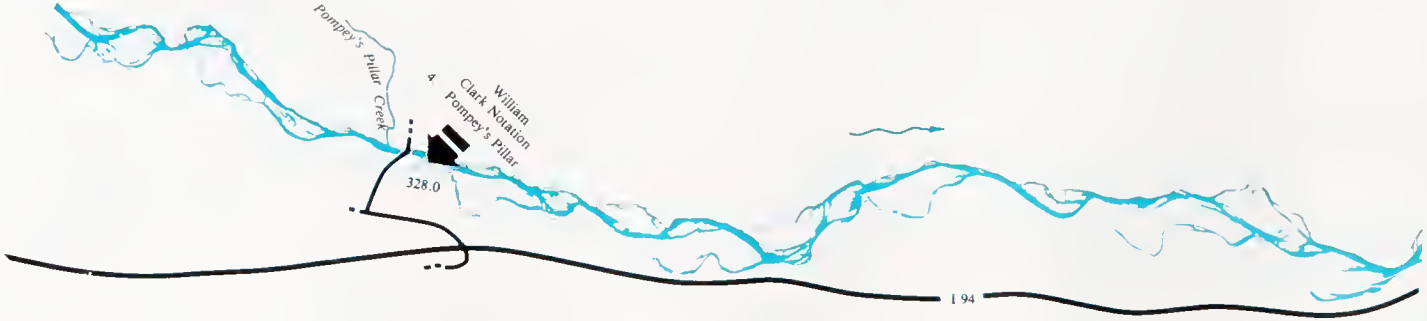


See page 57

SECTION 1

Crooked Creek
Rock Creek
Highway 10
348.8
Twelve Mile Creek
HUNTLEY
Pryor Creek

SECTION 1


Pompey's Pillar Creek
4
William Clark Notation
Pompey's Pillar
328.0
I 94

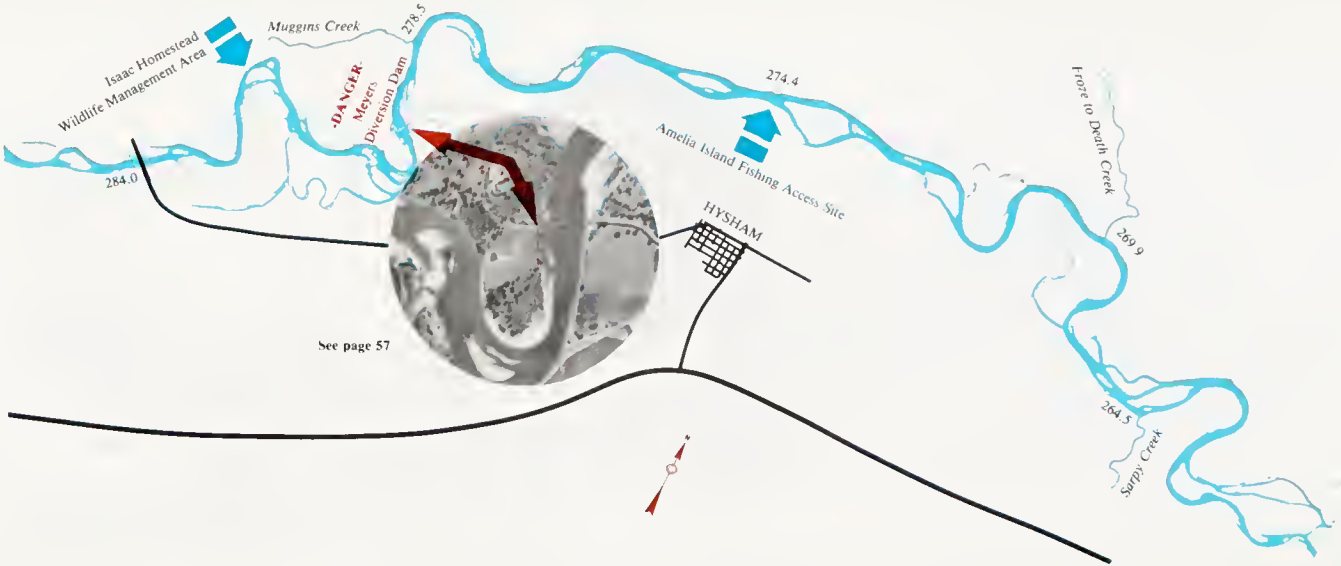
SECTION 2

See page 57
Hibbard Creek
310.8
Waco Diversion
-DANGER-
316.0
Captain Clark
Fishing Access Site

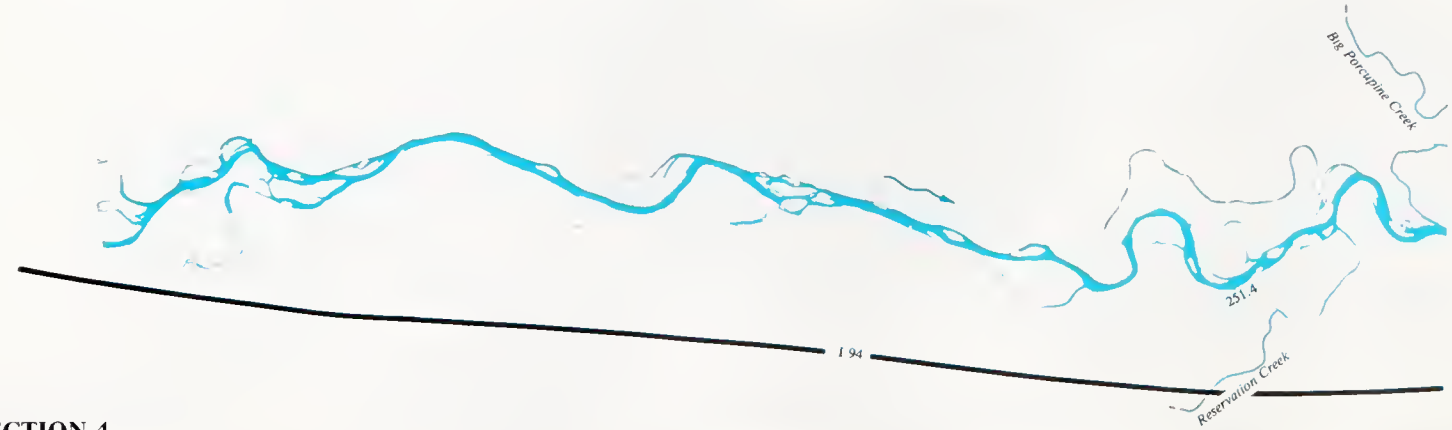
SECTION 2

See page 57
300.0
5. Junction City
Frontier Town
CUSTER
297.6
Diversion Dam
DANGER
Bighorn River
6. Mouth of Bighorn River
I 94
Manuel Lisa
Fishing Access Site

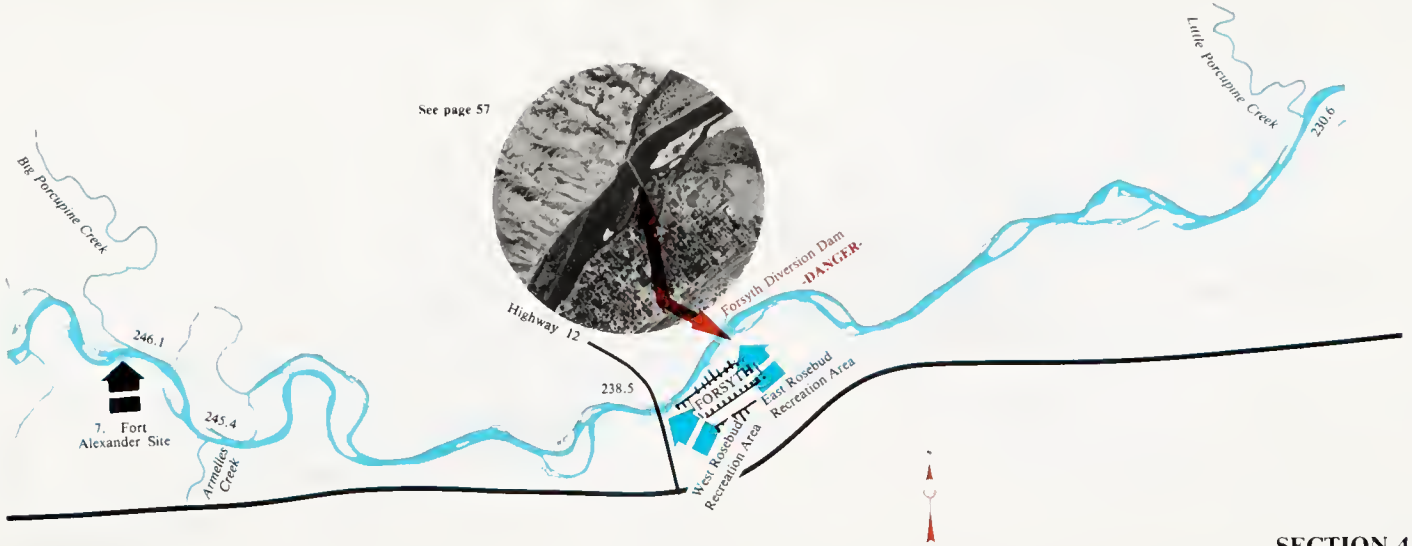
SECTION 3


Isaac Homestead
Wildlife Management Area
Muggins Creek
278.5
DANGER
Meyers
Diversion Dam
284.0
274.4
Amelia Island Fishing Access Site
HYSHAM
Froze to Death Creek
269.9
264.5
Sarpy Creek
See page 57

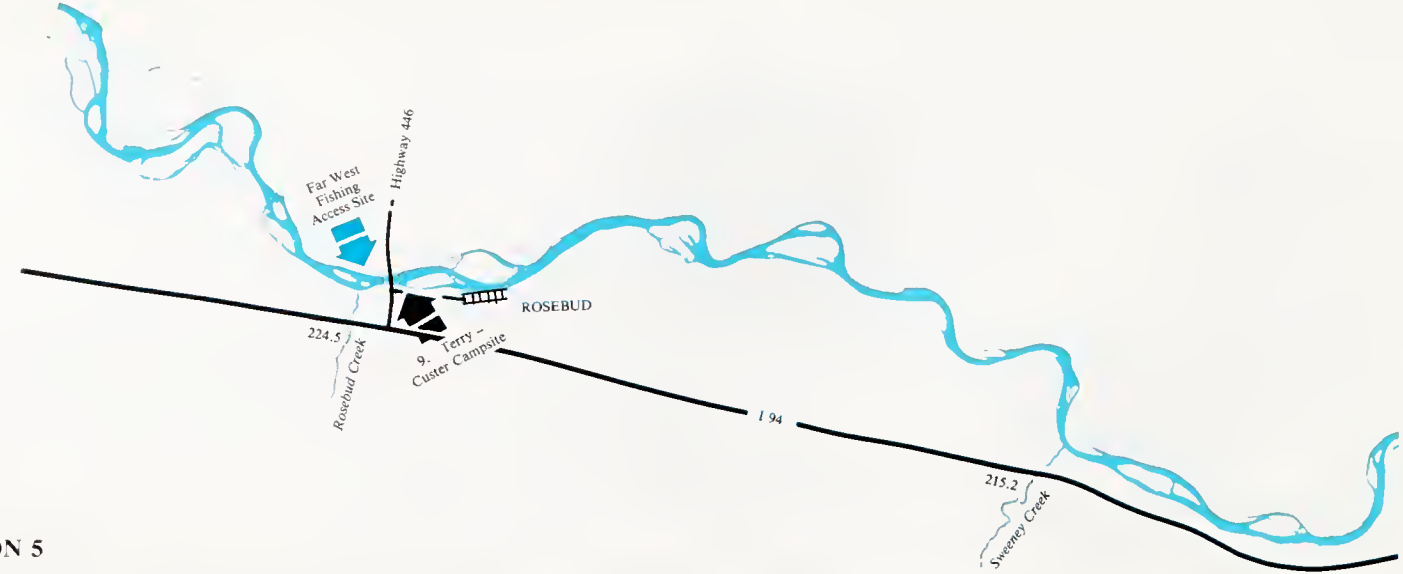
SECTION 3



SECTION 4

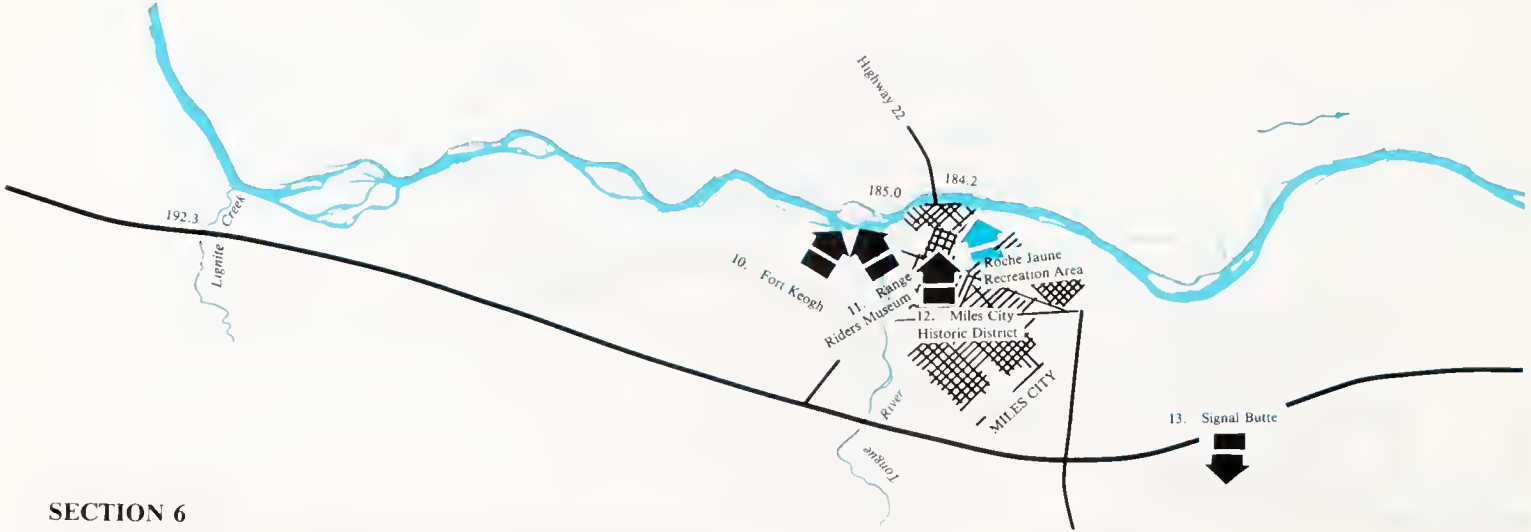

See page 57
Big Porcupine Creek
Little Porcupine Creek
230.6
Forsyth Diversion Dam
-DANGER-
Highway 12
246.1
245.4
238.5
7. Fort
Alexander Site
Armelles
Creek
FORSYTH
East Rosebud
Recreation Area
West Rosebud
Recreation Area

SECTION 4


Far West
Fishing
Access Site
Highway 446
ROSEBUD
224.5
Rosebud Creek
9. Terry –
Custer Campsite
I 94
215.2
Sweeney Creek

SECTION 5

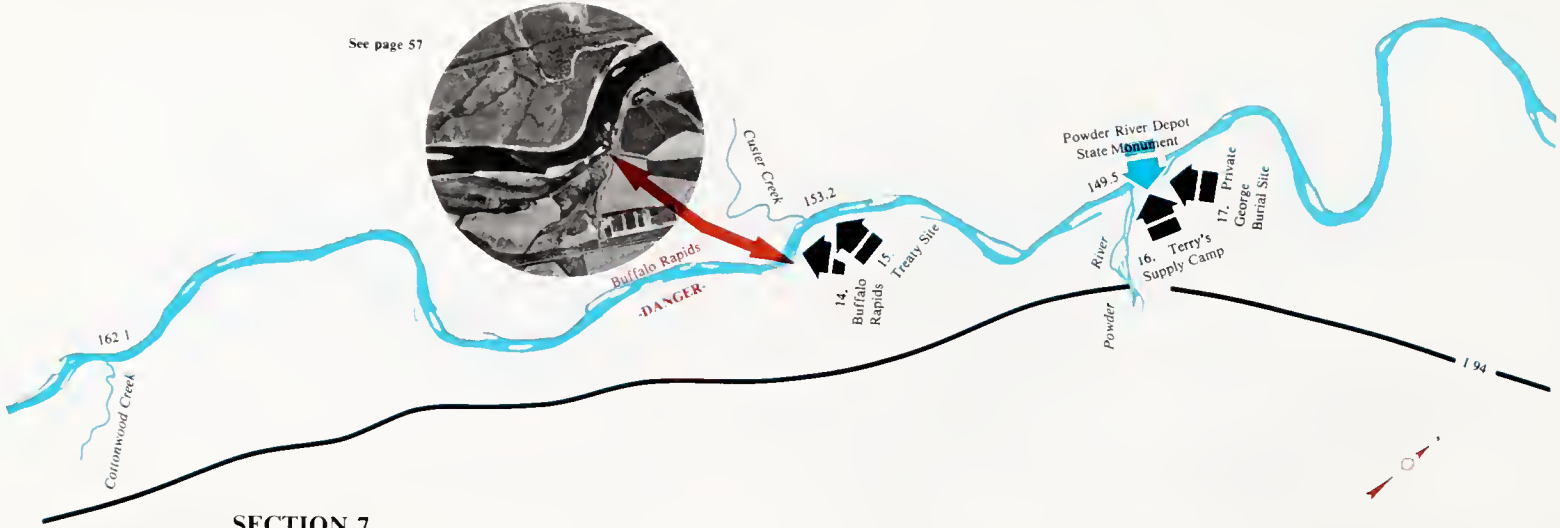
SECTION 5


Highway 22
184.2
185.0
192.3
Lignite Creek
10. Fort Keogh
11. Range Riders Museum
Roche Jaune Recreation Area
12. Miles City Historic District
MILES CITY
Tongue River
13. Signal Butte

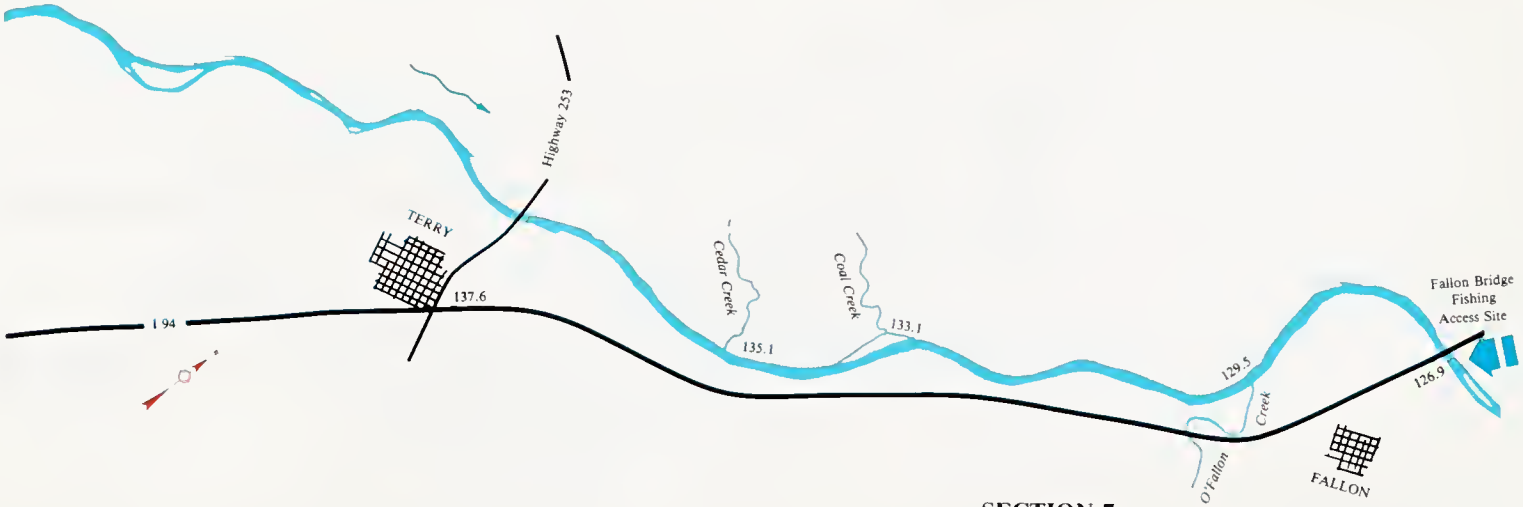
SECTION 6

Sunday Creek
175.7
Sand Creek
172.6
Muster Creek
169.4
167.2
Deep Creek
I 94

SECTION 6


See page 57
Custer Creek
153.2
Powder River Depot
State Monument
149.5
17. Private
George
Burial Site
16. Terry's
Supply Camp
River
Powder
15.
Treaty Site
14.
Buffalo
Rapids
Buffalo Rapids
-DANGER-
162.1
Cottonwood Creek
194

SECTION 7

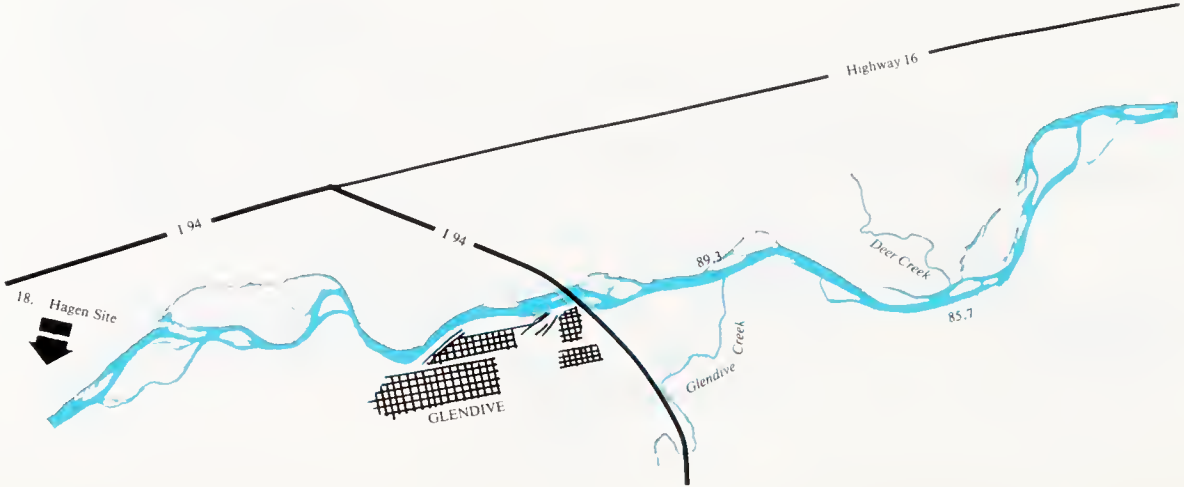

Highway 253
TERRY
137.6
I 94
Cedar Creek
135.1
Coal Creek
133.1
129.5
O'Fallon
Creek
126.9
Fallon Bridge
Fishing
Access Site
FALLON

SECTION 7

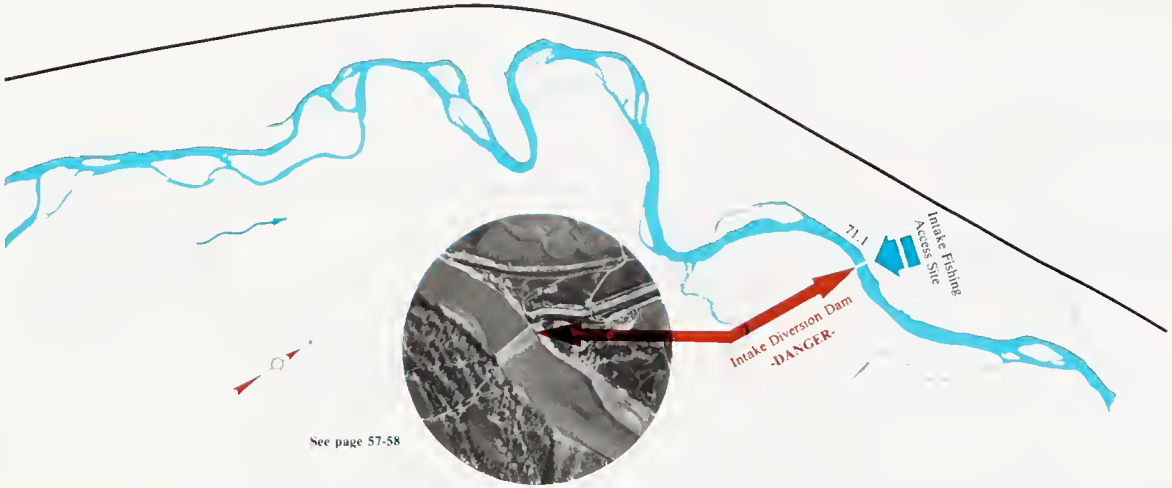
SECTION 8

I 94
Sand Creek
99.8
East Sand Creek
112.9
Cabin Creek
Clear Creek
106.6
Cedar Creek

SECTION 8

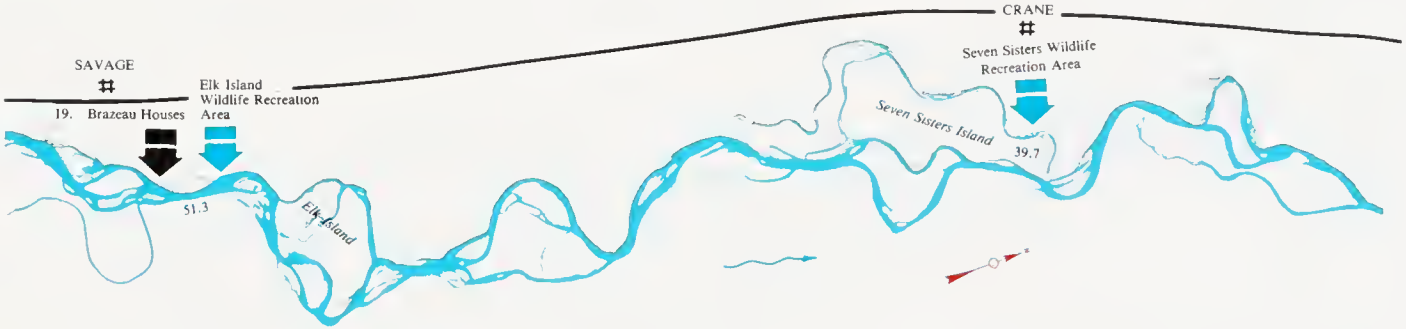

Highway 16
I 94
I 94
18. Hagen Site
GLENDIVE
89.3
Glendive Creek
Deer Creek
85.7

SECTION 9



See page 57-58

SECTION 10


SAVAGE
19. Brazeau Houses
Elk Island
Wildlife Recreation
Area
51.3
Elk Island
CRANE
Seven Sisters Wildlife
Recreation Area
Seven Sisters Island
39.7

SECTION 10

Highway 16
SIDNEY
Highway 200
Hay Creek
29.5
16.4
Highway 23
25.6
Bennie Peet Creek

SECTION 11

SECTION 11

Indian Caves near Billings

CHANNEL CATFISH

To an eastern Montana fisherman, "cats" are as traditional as apple pie, corn on the cob and shooting firecrackers on the Fourth of July.

This unique fish with its feline characteristics might not win any beauty contests, or even place first in a jumping contest, but a catfish has many virtues of its own. In fact some are pretty hard to beat.

The channel catfish, *Ictalurus punctatus*, is the largest member of the catfish family in Montana. It is native to the state and was first reported by the Lewis and Clark expedition in 1805. The channel cat has a deeply forked tail and scattered black spots along its side. Spotting disappears with age and old fish become inky black. It also has long, droopy barbels or "whiskers" around the mouth. Specialized sensory cells that aid in orientation, schooling, breeding and tasting are concentrated on the barbels. In prime catfish waters such as the lower reaches of the Yellowstone, channel cats average two to three pounds, with 12 to 14 pounders common. The Montana record stands at 23 pounds 4 oz.

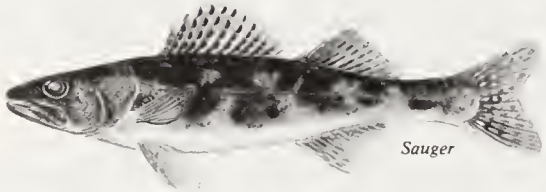
Angling tips: Channel catfish have insatiable appetites and a whole book could be devoted to baits. In its own way the mystique surrounding catfish baits is as diversified as the lore about artificial flies for trout. Catfish bait can be divided into five general categories: **live bait** - crayfish, minnows, frogs or just about anything that happens to swim in catfish waters; **cut bait** - any type of meat that can be cut in pieces such as carp and sucker; **soft bait** - poultry and beef livers; **stink bait** -rotten minnows, carp entrails, soured meat and numerous other possibilities; **other varieties** - kernel corn, cheese cubes, artificial lures, and cubes of white laundry soap.

Fishing rigs come in all sizes and varieties, from the barefoot boy's cane pole to setlines. Most bait fishermen prefer a short, heavy-duty bait casting rod and a level-wind bait casting reel. Two terminal rigs are popular. Some anglers prefer to tie a small barrel swivel on the end of a 15 to 30 pound test line. A small snap swivel is then attached for easy changing of a #2 or smaller snelled hook. Next, a short six to eight pound test line is attached to the swivel and weighted with a sinker to keep the bait on the bottom. Some prefer to rig up with a sliding sinker, and a split-shot placed 10 inches above the hook to hold back the sliding weight.

Angling hot spots: Channel catfish usually feed most actively early in the morning (dawn till about 10 a.m.) or late in the day (sundown to midnight). Fishing is generally better in the early spring and late summer. Good angling areas for the whiskered cat include deep holes and areas where the current rolls around brush, rock piles, boulders, bridge abutments or where it cuts under fallen trees and overhanging bushes. Channel cats like to hide all day in such cover, and if you place a lively bait in front of them, they'll probably grab it.

SAUGER AND WALLEYE

When the sauger and walleye spawning run occurs in the lower Yellowstone each spring, dormant fishing rods are quickly put into action. It's a sure sign that the fishing season has officially started.



Sauger, *Stizostedion canadense*, and walleye, *Stizostedion vitreum*, rank as the most popular and most sought after game fish in eastern Montana. When it comes to table fare, old "glassy eyes" just can't be beat. Many anglers confuse the sauger - or sand pike as it's commonly called - with its close relative, the walleye. Anglers often identify both as "pike" but

that's definitely a misnomer since both belong to the perch family. Although similar to the walleye, the sauger can be best distinguished by several rows of fairly uniform black spots on the dorsal fin (front fin on the back). The sauger also has four large dark blotches extending across the back into the side.

The average Yellowstone sauger and walleye weighs about one pound, although fish in the two to three pound class are common. The state record for sauger is 7 lbs. 2 oz., and 14 pounds for the walleye.

Angling tips: Angling for sauger and walleye in the Yellowstone is usually best during the spawning period of April and May and also during September and October when the river is low and clear with cooler water temperatures. Try your luck in the evening or on heavily overcast days when they move into shallow areas to feed. Sauger and walleye eyes are extremely sensitive to light, so during daylight they move into deeper water, where the sun's rays are less direct. If you catch one fish, chances of catching another in the same location are good, since they travel in schools. Sauger and walleye concentrate below diversion dams and irrigation structures when they spawn in spring, so these areas sometimes provide exceptional fishing. Other likely spots include slack water between fast riffles and mouths of flowing tributaries. In the live bait category, try minnows or night crawlers. Spoons, jigs, Finnish minnows and plastic leeches and worms seem to be the most productive lures.

Angling hot spots: Before and during spawning, sauger and walleye move upstream and concentrate below dams and irrigation structures, especially at Huntley, Waco, Myers, Forsyth and Intake. The mouth of the Tongue and Powder Rivers are also good spots to try during the spawning run.

SHOVELNOSE STURGEON

Although some would disagree, this toothless, bony plated, primitive fish with a shovel-shaped snout and four dangling barbels is considered a prize catch by many anglers. Of the three species of sturgeon found in

Montana, the shovelnose sturgeon (*Scaphirhynchus platorynchus*) is the smallest and most abundant. The shovelnose retains many primitive characteristics lost or modified in other more advanced fish. Instead of scales, the shovelnose has five rows of bony plates (scutes), which extend from behind the head to the tail or caudal fin. Another primitive characteristic is the shark-like heterocercal tail, meaning the upper lobe of the tail fin is longer than the lower. The toothless mouth on the underside of the head resembles and functions like a vacuum cleaner hose and is extended when feeding on the stream bottom and retracted when not in use. Larvae of aquatic insects make up the bulk of the diet of this species in the Yellowstone.

Angling tips and fishing hot spots: Although most anglers fish for shovelnose with rod and reel, many are caught on set lines. Casting and spin casting combinations all work well.

The best fishing occurs in late spring and early summer when sturgeon actively move to spawning areas. The biggest catches and largest fishes are reported in May, June and July, when prairie streams are high and muddy during spring runoff. Incidently, this is the only time when shovelnose occur in the Tongue and Powder Rivers. Sturgeon from the Yellowstone migrate into these tributaries in the spring during high water to spawn.

While shovelnose can be caught in the Yellowstone from Forsyth downstream to its mouth, more popular angling spots include (1) the area of the river near the mouths of the Tongue and Powder rivers, and (2) the area below the Intake Diversion near Glendive.

Worms are generally the most effective bait. Occasionally, cut bait and certain odorous catfish baits will entice the shovelnose. Use a heavy sinker and fish the bait right on the bottom in areas of moderate current. Avoid backwater areas and places with no current.

The state record for shovelnose sturgeon is 10 lbs. 8 oz. and was taken from the Yellowstone River. Larger shovelnose are available for the taking. Department of Fish, Wildlife and Parks fish sampling in the lower Tongue and Yellowstone rivers near Miles City revealed shovelnose in the 12- to 15-pound class.

Cooking tips: Now that you've caught a shovelnose, what do you do with it? Since a sturgeon must be skinned rather than scaled, a pair of pliers is a good tool: (1) make a circular cut through the skin just behind the head and completely around the body. (2) Next, cut the skin from head to tail on the top and bottom surfaces of the fish. Use pliers to pull off the skin. (3) Remove the head, entrails, fin and tail. (4) Cut the meat away from the cartilaginous spinal cord and it's ready for the skillet. Properly prepared, the shovelnose is an excellent table fish. The flesh can be fried, deep-fried, broiled or barbequed and it's especially tasty smoked.

BURBOT (LING)

Although the burbot, *Lota lota*, commonly known as ling, would probably not win too many popularity contests because of its eel-like appearance, it not only provides some good winter sport but also some good table fare.

Although ling are not commonly caught during the summer, they do provide local anglers with plenty of fishing opportunities during late winter. The ling is the only fresh-water member of the codfish family. Marine relatives include the cod, pollack, hake and haddock, all popular food species. There's no mistaking the ling; no other Montana fish looks like an eel and has a single barbel or whisker under its chin. The record ling caught in Montana weighed out at 12 lbs. 9¾ oz. The average ling caught in the Yellowstone averages between one and two pounds.

Angling tips and hot spots: Ling spawn in the Yellowstone during winter, usually in January, February and early March. They congregate before spawning and then move to the actual spawning site, usually in rocky areas. In the Yellowstone, ling move upstream where deep pools behind diversion dams attract spawning groups. Hot spots include the areas below the Huntley, Waco and Forsyth diversion dams.

Almost any kind of equipment can be adapted to winter ling fishing, including set lines. When rigging a conventional rod and reel, choose a reel that won't freeze up. Since bait is the usual fare in ling fishing, hooks, sinkers and an optional bobber compose the business end of the fishing rig. Ling have large mouths and a good-sized hook works best. Classed as predators and scavengers in feeding habits, ling eat insects, worms, snails, crayfish, other fish, and dead animal matter. Minnows, sucker meat, worms or animal entrails, such as pork or beef liver, provide good bait. One of the winter hot spots for ling on the Yellowstone is the diversion dam at Forsyth.

Cooking tips: In cleaning ling: (1) cut through the skin, all the way around the head; (2) holding the ling firmly by the head, pull the skin off with pliers; (3) remove the head and entrails; and (4) cut into pieces for freezing or cooking. Ling are delicious a variety of ways, including deep fat fried, basted with butter and broiled or baked.

HUNTING FOR AGATES ON THE LOWER YELLOWSTONE

By Pat Gudmundson

The yellowstone is a favorite river for rockhounds who come from many states and Canada to search for treasure on its banks. The treasures for rock hunters are the Montana agates found in the river gravel for a distance of about 300 miles, from around Custer downstream to the Sidney area.

Because of their popularity with rockhounds, agates have been picked up in the area for many years and are not as abundant as they once were, but still can be found, especially after ice jams and high water on the river have exposed new stones.

The free-flowing Yellowstone usually runs high in June, and after the June rise is a good time to look for rocks. When the water recedes, the agates are found on gravel bars and islands and also can be found on nearby hills and in creeks which flow into the Yellowstone.

Many rock hunters use boats to reach less accessible parts of the river and to float long stretches and look for agates on the many islands in the river.

Agates are a form of quartz. They are translucent and have a rough exterior skin, making them hard for an inexperienced rockhound to spot, but often they have a broken place or spot where the translucent quality shows through. Sometimes only pieces of larger rocks are found. The stones may be clear or may have spots and stripes of yellow, orange, brown, brownish red or black and a few have green markings. Dendritic patterns appear in many of the stones and with a little imagination one may find pictures of trees, lakes, hills, flowers, animals, even people, in the moss agates, sometimes called "scenic" agates.

The agates in the Yellowstone River vary in size from a fraction of a pound up to 10 or 20 pounds, but the latter are few and far between.

Rockhounds will also find other attractive rocks—jasper, petrified and agatized wood, and a variety of interesting stones.

Agates found on the Yellowstone River are believed to have been formed about 50 million years ago. Authorities disagree on just where and how these agates were formed, but they are now found in sedimentary material, having washed down some ancient stream bed.

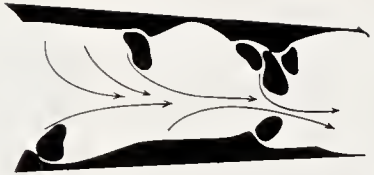
Lapidarists find Montana agate easy to work with and it makes beautiful jewelry.

Even though the river is hunted by many rockhounds every year, agates are still picked up every day. The river is undammed and is free to run high or low at various seasons, and can be covered in winter with a layer of ice several feet thick. In spring the ice jams often dig deep into the gravel, or block the river, causing main channels to move. Islands often shift position due to ice jams and high water. All of these things cause the exposed gravel to change and this brings new rocks to the surface.

No matter how many rockhounds search the river gravels, they still seem to find sacks of something to carry home. They walk beside the river, enjoy the fresh air and sunshine, hear the songs of birds, relax beneath a cottonwood tree, and after an hour, a day or a week on the river, go home happy with pleasant memories and some new material to work with.

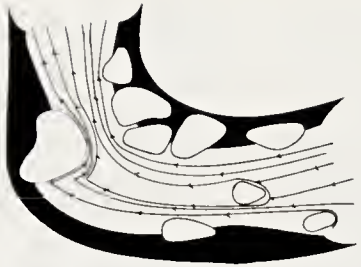
READING WHITE WATER

Not all canoeists prefer floating down a lazy river. Some are drawn to the thrill, excitement, and danger of white water. These are experts, able to "read" white water, and navigate dangerous rapids safely. While it's true white water is unpredictable and treacherous, it does break down into basic flow patterns. The canoeist who learns to recognize these patterns and how to deal with them, will be able to pick a safe course with confidence.

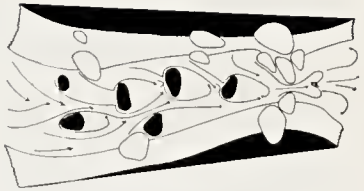


THE VEE: Note how the swift center current pulls past the slower side waters to form the vee. The center passages are unobstructed; the side passages are complicated by boulders.

A SERIES OF STANDING WAVES piling up at the base of a mild drop. In any such series, the first wave will be the largest and steepest, while the second will be large, yet smooth.



A CHUTE: Note how the power of the water converges as the river's volume is squeezed between the boulders. At the base of the sluice, the river's forces are redistributed over a wider area.



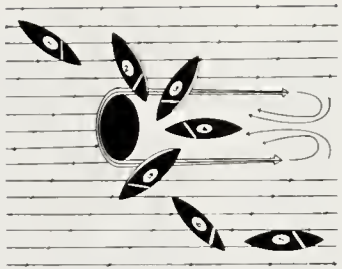
RISING WATER LEVELS completely change the character of a river. The boulder garden shown as black rocks in low water, soon gives way to the succession of mild waves and holes in medium water. The high, powerful waves and large holes in high water are suited only for decked boats such as kayaks. Bear in mind that although the river is less intricate at high water, it becomes faster, more powerful, and more dangerous. Flood waters are unsafe even for the most expert.

TWO KINDS OF PILLOWS: A) is formed by a rock not buried by the current. It will push a boat away from the rock which formed it. B) is formed by the rock which it covers. It will not push a boat away, and is very hard to spot. If a reaction wave forms at the top, the "white eddy" may be transformed into a hole or hydraulic. Be cautious when "ski-jumping" big rocks in strong currents.

A HOLE or STOPPER: Here the water piles up so quickly that it is thrown back upstream as a foamy pile. Note the small reaction wave, a vestige of a pillow, which is thrown up at the top of the drop. Any perfectly smooth wave followed by what looks like flat water downstream warns of a hole below.

A HYDRAULIC formed by a low dam. The steep drop forces the current to plunge far beneath the surface, and as a result the pileup begins much farther downstream. This creates a recirculating current, extensive and powerful.

A TURN: Note that the outside is deep and unobstructed, while the inside of the turn, being protected, is rocky.

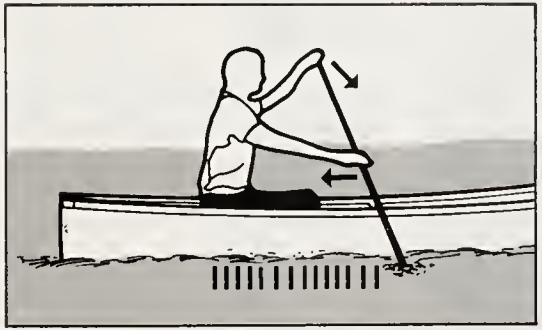


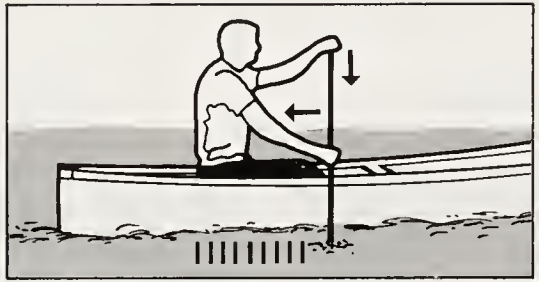
THE MECHANICS OF THE EDDY TURN: The important thing is to cross the eddyline completely, entering the eddy close to the rock which formed it.

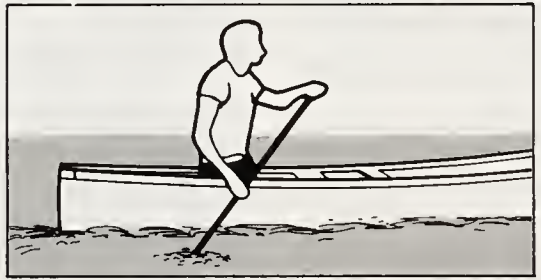
Text and drawings reprinted from ***WILDERNESS CAMPING, Michigan Department of Natural Resources.***

USING A PADDLE

Editor's note: Here, Al Button and Karl Ketter collaborate to explain efficient paddling and maneuvering on a river. Button, a white-water canoeist with nine year's experience, is a three-time national champion in wild-water C-1 (one-man decked canoe) and a bronze medal winner in the 1975 World Championships in Mavrovo, Yugoslavia. Ketter, a professional marathon canoe racer, first entered the Shawinigan Classic race in Quebec when he was 15. In the ensuing 18 years he has successfully toured the major racing circuits in the United States and Canada.







Racers and good cruisers paddle the same way. Just as a racer will use a certain stroke because it moves the canoe quickly, a good cruiser will use the same stroke because it wastes little effort and moves the canoe easily. The only difference is that the racer paddles quickly, while the cruiser adopts a more comfortable pace.

If two people are in the canoe, one sits or kneels in the bow, the other in the stern as they paddle on opposite sides of the canoe. Most important, they paddle rhythmically and in unison. Just as a runner strives for an even pace, good canoeists use even strokes to move the canoe most easily. Usually, the bowman sets the pace and the sternman matches the bowman's strokes to maintain momentum. The sternman usually is responsible for keeping the canoe on course.

If you're paddling alone, sit or kneel in the center of the canoe. Although you won't have to match strokes with anyone, evenly paced strokes will move the canoe more efficiently. You will use many of the same strokes whether you're paddling solo or with a partner. In either case, be sure that the canoe is trimmed, that is, sitting level in the water. If either the bow or stern is higher than the other end, the canoe will be harder to push through the water. If the canoe is not level, move the cargo or stash a few rocks in the high end. The seats of some canoes can be adjusted to achieve trim.

Here are the strokes you will need to begin. As you become more experienced, you'll blend and adjust your strokes to match the river. You may also want to learn other strokes. Watch good paddlers and experiment. Canoeing is like dancing: the step matches the music. But while everyone may be doing the same step, each has his own style.

The forward stroke

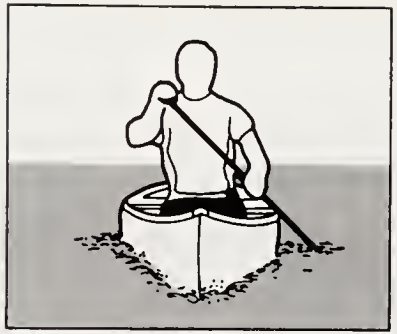
The forward or bow stroke is the foundation for nearly all other strokes. Learn it well and you will have little trouble grasping the more advanced techniques.

To begin the forward stroke, grip the paddle slightly above the blade and put the other hand firmly on top of the grip. Your hands should be shoulder width apart.

Reach ahead with the tip of the paddle blade and dip in into the water (1, left). Your top hand should be near your chin, your bottom arm extended forward. The shoulder of your top hand should be back and the shoulder of your bottom hand forward.

Push your top hand forward, down and slightly across your body while pulling your bottom arm back, bending it only slightly (2). Rotate your torso with the stroke to use your powerful shoulder and back muscles. During the stroke, your top hand should be no higher than your head.

Relax as you draw; don't force the stroke. Stop pulling when the paddle blade passes your hip (3). A longer stroke only wastes energy. Slide the paddle out of the water and swing it forward for the next stroke. In a stiff wind you may want



to "feather" the blade by swinging the paddle forward with the blade parallel to the water's surface to cut wind resistance.

Backpaddling is the reverse of the forward stroke and is handy for backing away from shore, stopping in calm water or slowing your descent through fast water.

Hut!

After a few strokes you will discover a problem that vexes most beginning canoeists: with

each stroke the canoe turns away from the side on which the sternman is paddling.

The simplest and most efficient way to correct the canoe's wayward tendencies is to switch sides, a technique developed by marathon races and quickly mastered by novices. After several strokes, as the canoe begins to stray from its course, the sternman calls "hut" or any other chosen signal. The paddlers finish the stroke (1, right) and simultaneously switch sides. They each

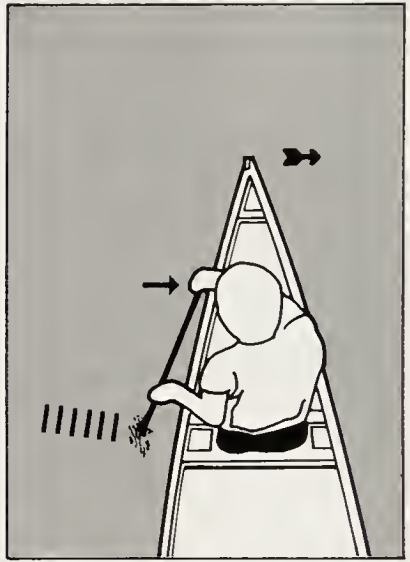
release their top hand and swing the paddle across the canoe (2). The free hand (the hand that was on top) then grips the paddle shaft while the other hand slides to the top of the paddle (3). Continue paddling as before. The switch takes no more time than a stroke and the canoe wanders no more than a couple of feet in 50 feet of travel. The trick is to switch before the canoe has strayed very far.

The draw stroke

The draw, a powerful turning stroke, is a variation of the forward stroke. But instead of reaching forward, reach far to the side with both arms and draw the canoe toward the paddle. Several draw strokes by both paddlers (paddling on opposite sides of the canoe) will quickly turn the canoe in a half-circle. Like the forward stroke, the draw is best executed in unison.

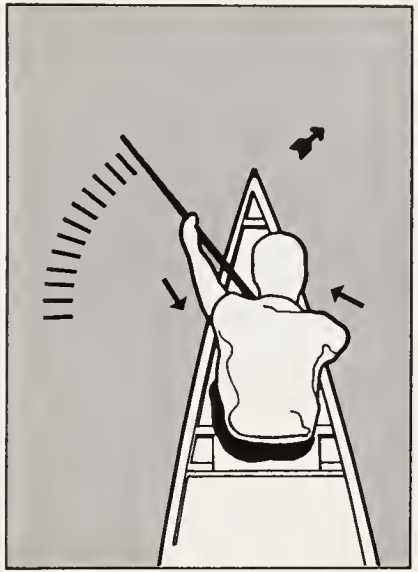
The pry stroke

The pry stroke is usually used by the sternman, though it may be done by both paddlers to quickly turn the canoe without changing sides. Unlike the draw, the pry forces the canoe away from the paddle. Draw the paddle beside or slightly behind you and twist it so the blade is parallel to the canoe. Brace your bottom hand against the gunwale and pull your top hand across your chest, using the paddle as a pry bar. The pry is best used for turning short distances quickly. If you must turn the canoe very far, switch sides and draw.



The sweep stroke

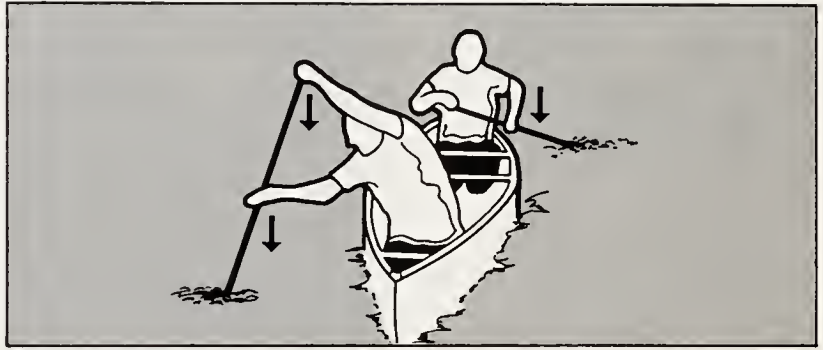
The sweep, done by paddlers in either the bow or stern, is another turning stroke. Unlike the draw or pry strokes, which turn the canoe quickly, the sweep turns the canoe gradually while maintaining forward speed. Do the sweep like the forward stroke, but instead of drawing the paddle straight back, swing it in a wide arc far from the side of the canoe. A sweep done by either the bowman or sternman will turn the canoe away from the paddle. A bowman paddling on the left side, as shown in the illustration, sweeps from an 11 o'clock to 9 o'clock position. A sternman paddling on the left sweeps from a 9 o'clock to a 7 o'clock position. The sweep is used by only one paddler at a time, for sweep strokes in the bow and stern counteract each other. But a draw by the bowman and a sweep by the sternman will quickly turn the canoe while driving it forward.



Bracing

Watch two novices run a difficult rapids and you'll notice that they either fearfully clutch the gunwales or wave their paddles in the air. They will probably tip, demonstrating that neither technique is effective. Good canoeists, on the other hand, use the high brace and low brace to stabilize the canoe as though it had an outrigger.

The bowman in the illustration is using a high brace, a stroke similar to a draw stroke except that the paddler is using the paddle as a crutch by leaning as well as drawing. The sternman in the illustration is using a low brace by leaning on the paddle as he sweeps it slowly forward with the blade nearly flat on the water. Bracing strokes are done differently in different currents and are blended with other strokes. Remember, your paddle does no good if it's not in the water. If you do nothing else in a rapids, keep paddling.



DIVERSION DAMS AND RAPIDS ON THE LOWER YELLOWSTONE

Diversion dams are extremely tempting to some floaters. Do not let them tempt you. Avoid them at all costs. If you run them in low water, you have a good chance of damaging your boat. Running them in high water can be extremely dangerous. If the bow goes under and you swamp, the strong back-flow of water on the surface will push you toward the dam and tend to prevent one's escape. Remember, lives have been lost at diversion dam sites on the lower Yellowstone. Don't let this happen to you! Refer to the accompanying photos for each diversion dam before bypassing it.

A. **Huntley Diversion Dam**
Location - About 9 river miles downstream from Billings.
Precautions to take - This dam is rated as **extremely dangerous.** The overflow channel to the left (north) of the diversion can be used during periods of high flow. During periods of low flow, floaters should portage to the left (north bank) to bypass the diversion.

B. **Waco Diversion Dam**
Location - About 11 river miles downstream from Pompey's Pillar.
Precautions to take - This dam is rated as **extremely dangerous.** The overflow channel to the left of the diversion can be used during periods of high flow. Floaters desiring to portage should use the left channel (north bank) to bypass the diversion.

C. **Diversion Dam below the mouth of the Bighorn River**
Location - About two river miles downstream from the mouth of the Bighorn River.
Precautions to take - This diversion is rated as moderately dangerous. Floaters should use right channel (south bank) in bypassing diversion. Portaging is not necessary.

D. **Myers Diversion Dam**
Location - About 5 river miles downstream from the Myers bridge and situated in the main channel.
Precautions to take - This diversion, which partially crosses the Yellowstone, can be easily bypassed on either side of the main channel. Cottonwood snags are usually found on the left (north) side of the river.

E. **Forsyth Diversion Dam**
Location - The diversion crosses the main channel at the city of Forsyth.
Precautions to take - This diversion is rated as **extremely dangerous.** Floaters should use the right (south) bank for portaging.

F. **Buffalo Rapids**
Location - Approximately 26 river miles east of Miles City and 3 miles east of the Haughian Ferry Cable. The rapids are located on the right (south) side of the river. A smaller set of rapids is situated immediately west of Buffalo Rapids (see photo).
Precautions to take - The rapids can be dangerous during periods of low water. Use the left (north) side of the main channel to avoid rapids. The smaller set of rapids to the immediate west pose no real danger to floaters. Use the left (north) side of the channel to bypass these rapids.

G. **Intake Diversion Dam**
Location - Approximately 17 miles downstream

from Glendive at the Intake Fishing Access site.
Precautions to take - This diversion dam is **extremely dangerous**. Floaters should use the right (south) bank for portaging.
Other Precautions - Split channels, blind curves, and "willow jungles" are frequent in various stretches of the lower Yellowstone. Resist the temptation to explore these little byway channels. They may be clogged with logs or willows. The best selection is the channel you can see all the way through before you start down. If you can't see all the way, select the channel that looks wider, well established and open. The deepest and swiftest water is on the outside of a bend but this is also where the obstacles are most apt to be, so stay near the inside of a blind bend in high water.

RIVER SAFETY

A good float is a safe float trip. The following safety code, written by the American Whitewater Affiliation, has been reprinted with their kind permission. Although produced by a whitewater association, it is equally appropriate to paddlers of open canoes, kayaks and other boats on the lower Yellowstone.

If in doubt of what lies ahead, get out and scout!

American Whitewater Affiliation Safety Code

PERSONAL PREPAREDNESS AND RESPONSIBILITY

1. Be a competent swimmer with ability to handle yourself underwater.
2. **Wear a lifejacket.**
3. Keep your craft under control. Control must be good enough at all times to stop or reach shore before you reach any danger. Do not enter a rapid unless you are reasonably sure you can safely navigate it or swim the entire rapid in event of capsize.
4. **Be aware of river hazards and avoid them. Following are the most frequent killers.**

   High water. The river's power and danger, and the difficulty of rescue increase tremendously as the flow rate increases. It is often misleading to judge river level at the put-in. Look at a narrow, critical passage. Could a sudden rise from sun on a snow pack, rain, or a dam release occur on your trip?

   Cold. Cold quickly robs one's strength, along with one's will and ability to save oneself. Dress to protect yourself from cold water and weather extremes. When the water temperature is less than 10°C (50 degrees F), a diver's wetsuit is essential for safety in event of an upset. Next best is wool clothing under a windproof outer garment such as a splash-proof nylon shell; in this case one should also carry matches and a complete change of clothes in a waterproof package. If, after prolonged exposure, a person experiences uncontrollable shaking or has difficulty talking and moving, he must be warmed immediately by whatever means available.

   Strainers. Brush, fallen trees, bridge pilings, or anything else which allows river current to sweep through but pins boat and boater against the obstacle. The water pressure on anything trapped this way is overwhelming, and there may be little or no white water to warn of danger.

   Weirs, reversals, and souse holes. The water drops over an obstacle, then curls back on itself in a stationary wave, as is often seen at weirs and dams. The surface water is actually going **upstream**, and this action will trap any floating object between the drop and the wave. Once trapped, a swimmer's only hope is to dive below the surface where current is flowing downstream, or try to swim out the end of the wave.
5. Boating alone is not recommended. The preferred minimum is three per craft.
6. Have a frank knowledge of your boating ability. Don't attempt waters beyond this ability. Learn paddling skills and teamwork, if in a multiple-manned craft, to match the river you plan to boat.
7. Be in good physical condition consistent with the difficulties that may be expected.

8. Be practiced in escape from an overturned craft, in self-rescue, in rescue, and in artificial respiration. Know first aid.
9. The Eskimo roll should be mastered by kayakers and canoers planning to run large rivers and/or rivers with continuous rapids where a swimmer would have trouble reaching shore.
10. Wear a crash helmet where an upset is likely. This is essential in a kayak or covered canoe.
11. Be suitably equipped. Wear shoes that will protect your feet during a bad swim or a walk for help, yet will not interfere with swimming (tennis shoes recommended). Carry a knife and waterproof matches. If you need eyeglasses, tie them on and carry a spare pair. Do not wear bulky clothing that will interfere with your swimming when waterlogged.

BOAT AND EQUIPMENT PREPAREDNESS

1. Test new and unfamiliar equipment before relying on it for difficult runs.
2. Be sure craft is in good repair before starting a trip. Eliminate sharp projections that could cause injury during a swim.
3. Inflatable crafts should have multiple air chambers and should be test inflated before starting a trip.
4. Have strong, adequately sized paddles or oars for controlling the craft and carry sufficient spares for the length of the trip.
5. Install flotation devices in non-inflatable craft, securely fixed, and designed to displace as much water from the craft as possible.
6. Be certain there is absolutely nothing to cause entanglement when coming free from an upset craft; i.e., a spray skirt that won't release or tangles around legs; life jacket buckles, or clothing that might snag; canoe seats that lock on shoe heels; foot braces that fail or allow feet to jam under them; flexible decks that collapse on boater's legs when a kayak is trapped by water pressure; baggage that dangles in an upset; loose rope in the craft, or badly secured bow/stern lines.
7. Provide ropes to allow you to hold onto your craft in case of upset, and so that it may be rescued. Following are the recommended methods:

   Kayaks and covered canoes should have 15 cm (6 in.) diameter grab loops of 7 mm (¼ in.) rope attached to bow and stern. A stern painter 2 m (7 or 8 ft.) long is optional and may be used if properly secured to prevent entanglement.

   Open canoes should have bow and stern lines (painters) securely attached consisting of 2 to 3 m (8 to 10 ft.) of 7 mm or 10 mm (¼ or 3/8 in.) rope. These lines must be secured in such a way that they will not come loose accidentally and entangle the boaters during a swim, yet they must be ready for immediate use during an emergency. Attached balls, floats, and knots are not recommended.

   Rafts and dories should have taut perimeter grab lines threaded through the loops usually provided.
8. Respect rules for craft capacity and know how these capacities should be reduced for white-water use. (Life raft ratings must generally be halved.)
9. Carry appropriate repair materials: tape (heating duct tape) for short trips, complete repair kit for wilderness trips.
10. Car top racks must be strong and positively attached to the vehicle, and each boat must be tied

to each rack. In addition, each end of each boat should be tied to car bumper. Suction cup racks are poor. The entire arrangement should be able to withstand all but the most violent vehicle accident.

LEADER'S PREPAREDNESS AND RESPONSIBILITY

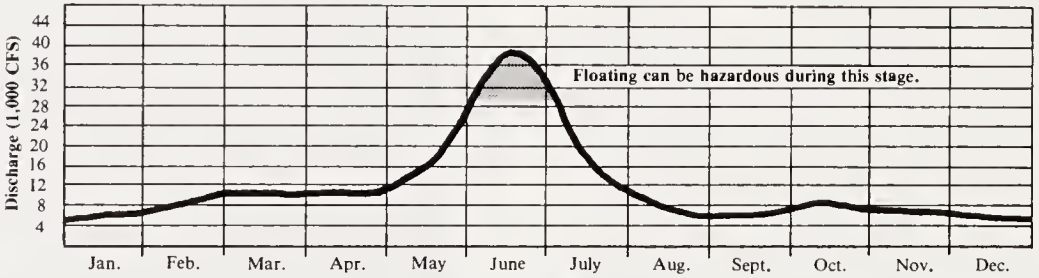
1. **River conditions**. Have a reasonable knowledge of the difficult parts of the run, or in an exploratory trip, examine maps to estimate the feasibility of the run. Be aware of possible rapid changes in river level, and how these changes can affect the difficulty of the run. If important, determine approximate flow rate or level. If trip involves important tidal currents, secure tide information.
2. **Participants**. Inform participants of expected river conditions and determine if the prospective boaters are qualified for the trip. All decisions should be based on group safety and comfort. Difficult decisions on the participation of marginal boaters must be based on total group strength.
3. **Equipment**. Plan so that all necessary group equipment is present on the trip; 15 to 30 m (50 to 100 ft.) throwing rope, first aid kit with fresh and adequate supplies, extra paddles, repair materials, and survival equipment if appropriate. Check equipment as necessary at the put-in, especially: life jackets, boat flotation, and any items that could prevent complete escape from the boat in case of an upset.
4. **Organization**. Remind each member of individual responsibility in keeping group compact and intact between leader and sweep (capable rear boater). If group is too large, divide into smaller groups, each of appropriate boating strength, and designate group leaders and sweeps.
5. **Float Plan**. If trip is into a wilderness area, or for an extended period, your plans should be filed with appropriate authorities, or left with someone who will contact them after a certain time. Establishment of checkpoints along the way at which civilization could be contacted if necessary should be considered. Knowing location of possible help could speed rescue in any case.

In Case of Upset

1. Evacuate your boat immeditely if there is imminent danger of being trapped against logs, brush, or any other form of strainer.
2. Recover with an Eskimo roll if possible.
3. If you swim, hold onto your craft. It has much flotation and is easy for rescuers to spot. Get to the upstream end so craft cannot crush you against obstacles.
4. Release your craft if this improves your safety. If rescue is not imminent and water is numbing cold, or if worse rapids follow, then strike out for the nearest shore.
5. Extend your feet downstream when swimming rapids to fend against rocks. Look ahead. Avoid possible entrapment situations: rock wedges, fissures, strainers, brush, logs, weirs, reversals, and souse holes. Watch for eddies and slackwater so that you can be ready to use these when you approach. Use every opportunity to work your way toward shore.
6. If others spill, go after the boaters. Rescue boats and equipment only if this can be done safely.

River Discharge

River discharge or the amount of flowing water is one of the most important factors to be considered by the floater. When the discharge reaches and exceeds 30,000 cubic feet/second (mid May-mid June), floaters are warned that floating conditions can be extremely hazardous and caution should be used. Low flow regimes usually do not present any major problems to floaters. Instream flow reservations will help insure that excessive amounts of water will not be removed from the Yellowstone. Float time on the lower Yellowstone varies with the volume of water and type of floating craft. The average mid-summer current is about 4½ MPH and the average floater travels 20-25 miles/day.



Water Flow Chart (Hydrograph) Yellowstone River at Sidney.

The vertical axis of the hydrograph indicates the amount of water flowing past a particular point per second and the horizontal axis indicates the month. The flow figures are based on 39 years of record (1936-1974). However, for one special month in any given year, the water level may be considerably higher or lower than the graph indicates. Even during one day the river water level may fluctuate because of excessive snow melt or rain.

GLOSSARY

ACCESS POINT — a point beside a river, stream or lake to which canoes, equipment, people and usually vehicles can be easily brought.

BACKWATER — an area of virtually still water, joined to the stream but relatively unaffected by its current.

BACK WAVE — the uphill slope found at the bottom of strong chutes or falls; a hydraulic jump.

BOW — the front of a boat.

BRAIDED STREAM — a river whose course consists of a network of diverging and converging shallow channels, separated by bars of alluvial material; dangerous sweepers and log jams are often associated with braiding.

BOILS — upwelling of water into a mound.

BROACHING — turning broadside to the current owing to unequal forces on the bow and stern.

CHANNEL — the deepest part of a river bed, containing its main current; a canoeable route through a section of the river or rapid.

CHUTE — a channel through a gap in a rapid, steeper and faster than the surrounding water; a V-shaped notch in a ledge.

CONFLUENCE — the point where a smaller stream flows into a larger stream or river.

DOWNGRADE — to cut downwards, as a river does where it is attempting to reach the same level as the river or body of water into which it flows.

DOWNSTREAM — a point closer to the mouth of the river in the direction the river is flowing. Left or right banks refer to the direction when facing in the same direction as the flow of the river.

DRAW — a stroke used to move a boat sideways with little up-or-downstream movement.

EDDY — the downstream side of an obstruction, either in midstream or by the bank, where the flow of the current is reversed or circulated.

ENTRENCH — the action of a river to cut deeply in its bed forming a trench or gorge; also known as incise.

GRADIENT — the steepness of a slope; the average rate of descent of the river expressed in meters per kilometer, feet per mile, a percentage or a ratio.

HAYSTACK — large pointed waves associated with deceleration of the current caused by a reduction in gradient.

HEAVY WATER — a whitewater term for an above normal flow in a river characterized by high standing waves, fast currents, extreme differences in velocity, boils, whirlpools and holes; usually present in large rivers and rivers in flood.

KAYAK — a decked boat derived from the Eskimo craft, paddled by one or two persons from a sitting position, with a double bladed paddle.

KEEPER — a wave which traps paddlers and boats. Dangerous and somtimes fatal. Divided into two types: (1) A keeper resulting from an isolated boulder or rock; so-called one dimensional keeper, white eddy or souse hole: (2) a wave below a ledge or weir resulting in a long continuous keeper that may stretch entirely or partially across a river; so-called two-dimensional keeper. Characterized by a highly aerated back flow at the surface.

LATERAL (CROSS) CURRENT — (1) a current created by a sudden diversion of the river such as a midstream boulder, a ledge or a steep bank on the outside of a tight turn. (2) a current created by a channel or tributary entering the main stream.

LOG-JAM — a single log or number of logs caught on some obstruction, but allowing the current to flow forcefully through and around it like a sieve; extremely dangerous since boats and paddlers are drawn towards it and can become entangled and trapped.

MEANDER — a sinuous winding course of a river; may be so exaggerated as to create the conditions for ox-bow formation.

OX-BOW — a lake created by a meander bend of a river being cut off by the river finding a new channel across its neck; also known as an abandoned meander.

PAINTER — a line attached to bow or stern of a canoe.

PILLOW — a phenomenon where water is raised and flows over a mid-stream rock. Named because of its appearance.

POOL — section of a river slower and deeper than the surrounding area.

POOL AND RIFFLE RIVER — a river exhibiting alternate deep pools at bends and shallow gravel bars between, usually at low water levels. An extreme form is the pool and rapid river.

PORTAGE — (1) to carry boat and equipment overland either around an obstruction too dangerous to paddle or to gain access to or egress from the river or lake; (2) a trail along which boat and equipment is carried.

RAPID — a section of river where the gradient increases, characterized by increased velocity, obstructions and turbulence; usually accompanied by white water.

SPILLWAY — a concrete channel which carries water over a dam to the stream channel below. Sometimes they are unprotected and can draw canoes into them and over the dam.

SPRAY SKIRT — cover attached to paddler and cockpit to enclose the space between them and keep out water.

STANDING WAVES — a general term describing rollers and haystacks.

STERN — the back of a boat.

SWEEPER — (1) a tree extending over or across a channel with its roots still attached to the bank; occurs most often on the outside of bends owing to the bank being undercut; (2) a log projecting from a log-jam.

TRIBUTARY — a smaller stream which flows into a larger stream or river.

UNDERCURRENT — a current which sucks objects under the water.

UPSTREAM — (1) the direction opposite to the flow of the river; (2) a location higher up the river.

WEIR — small man-made dam.

WET-SUIT — a close-fitting garment of neoprene sponge which affords thermal insultation in cold water.

WHITEWATER — a section of river which takes on an aerated foamy appearance owing to turbulence, obstacles, etc.

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